Towns of Wendell and Pelham

Forest Conservation Project
Pelham Hills

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On behalf of the towns of Wendell and Pelham
Produced with the assistance of a Massachusetts Smart Growth Assistance Grant

The Wendell and Pelham Forest Conservation Advisory Committees have served as the primary town coordinating bodies for this project. The project could not have taken place without the assistance of many other town boards in both communities, especially the Planning Boards, Boards of Selectmen, and Conservation Commissions.

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This report is a planning document intended to guide the Towns of Wendell and Pelham in considering options. As always with any new bylaw or regulation, town counsel should review any resulting regulatory change and ensure compliance with all state laws.

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Executive Summary

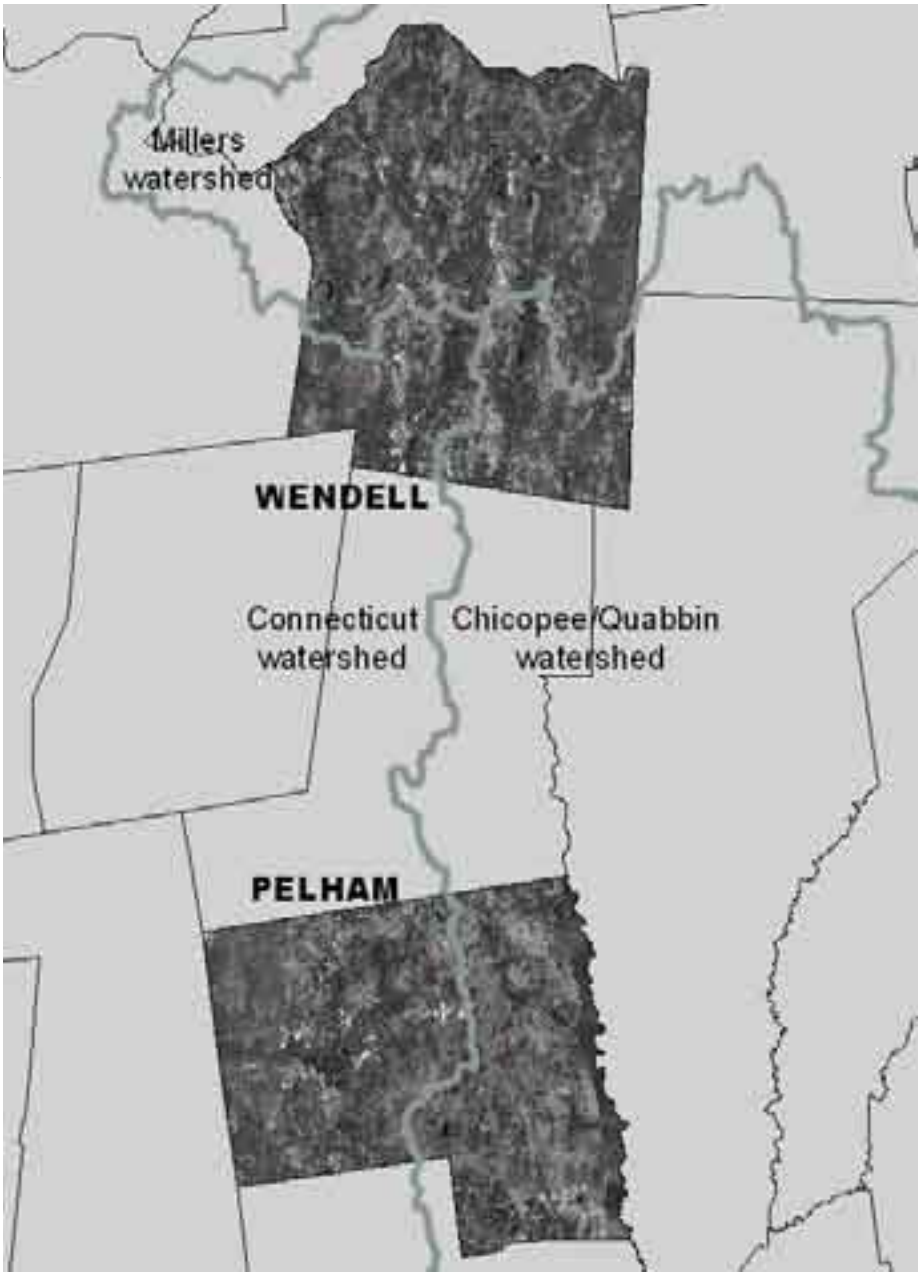
In Wendell and Pelham, there is strong community support for increasing efforts to conserve working landscapes and intact forest ecosystems. The towns jointly applied for, and received, a Massachusetts Smart Growth Assistance Grant to kick off this effort and help spur regional forest conservation efforts. Several other communities in the Pelham Hills, most notably Shutesbury, are already working on forest conservation.

The objectives of the current Smart Growth funded part of the Pelham Hills Conservation Project are:

- Promote understanding of the connection between working landscapes and intact forest ecosystems, the community character of the area, the rural economy, and the natural environment.
- Identify specific regulatory and public policy measures to help support working landscapes and intact forest ecosystems.
- Create model approaches that can work throughout the Pelham Hills and North Quabbin area.
- Create specific approaches that can be adopted for Wendell and Pelham.

Although Wendell and Pelham are very different communities, they both share a core identity and vision that emphasizes an intimate connection to the working landscapes and intact forest ecosystems that dominate both towns. The Pelham Hills Forest Conservation Project is designed to help the communities consider different options to preserve these resources in a sustainable fashion.

As part of this process, Wendell and Pelham have explored a variety of regulatory and non-regulatory strategies to improve forest conservation.



Rural Character versus Forest Conservation

In Wendell and Pelham, residents are interested in preserving both rural character and natural ecosystems. Generally, these goals are compatible, and most of the model approaches in this report support both goals. Communities, however, may want to have a discussion of priorities. Do you want to encourage new homes along roads, preserving back forest land, or back from the road, preserving the rural character.

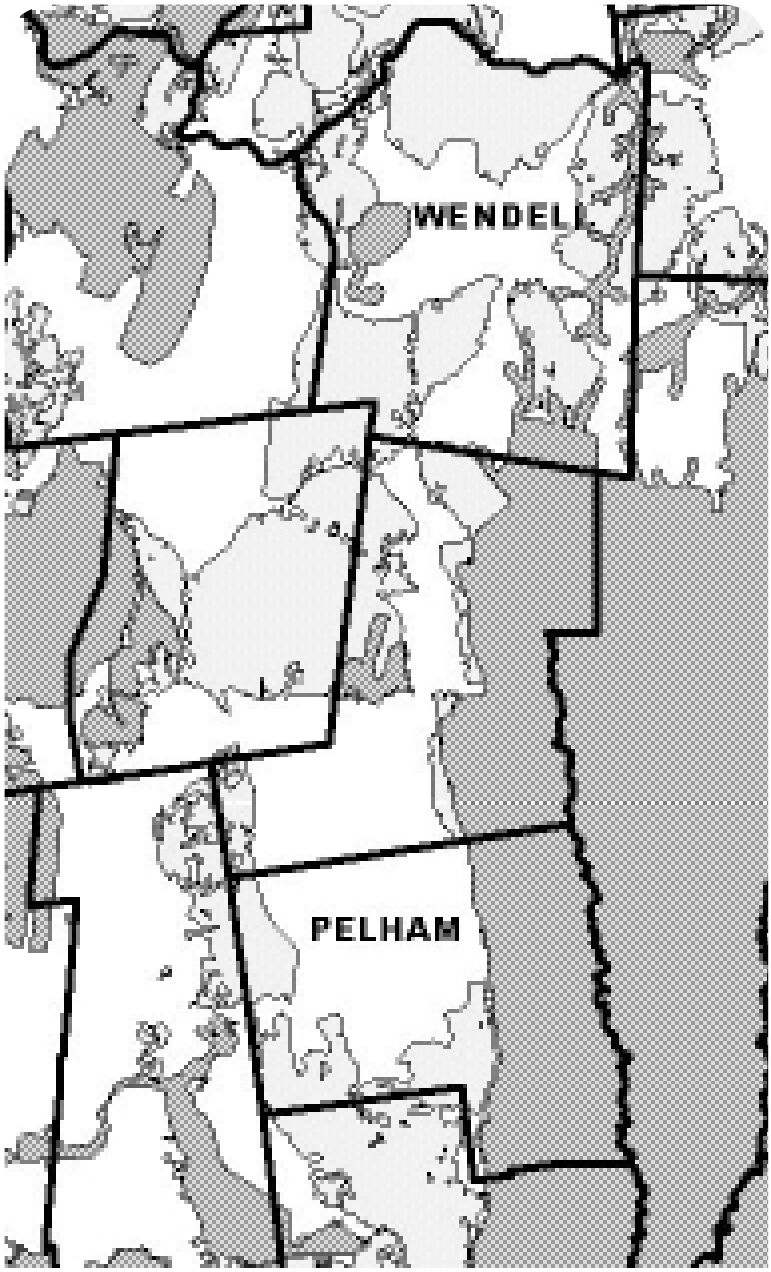
Pelham Hills Forest Conservation Challenge

The forest and natural ecosystem resources found in Wendell and Pelham are remarkable for their natural beauty and their biological diversity. The communities form the western edge of the Quabbin Biocore/North Quabbin Bioreserve. Much of the land in both communities is within the watersheds of public drinking water supplies.

Bioreserve: An intact natural ecosystem that is large enough to preserve the natural variety and strength of native plant and animal species and is as free of human influence as possible.

Biocore: The most viable habitat for rare species and natural communities.

This is one of the largest and most intact ecosystems in Massachusetts with vast tracts of forest already permanently preserved as open space. Preservation and sustainability of these ecological resources, working landscapes (farms and forests), rare species habitats, and drinking water supplies is important to the communities and the greater good. Fortunately, Wendell and Pelham residents want to sustain the land to protect natural resources and working landscapes.



Supporting Habitat

Biocore Habitat

Wendell and Pelham, however, have significant development and economic pressures. They are on the cusp between suburban-growth pressures emanating from several directions, especially from Amherst and the fast-growing University of Massachusetts, and the desire to maintain the rural undeveloped forest bioreserve.

The development that is occurring is creating a suburban "veneer" characterized by new homes built along the road often with disregard for the rural character, the ecological integrity, and the connection to the land that has characterize the Pelham Hills for so many years.

This type of development pattern could change the flavor of these communities within a generation. Further, neither town is fully prepared for the possibility that land landowners will sell their property for development in the near future.

Although much of the land has been preserved, large tracts of permanently preserved open space do not necessarily prevent the creation of a roadside suburban veneer, the loss of connection with the land, or the risk that natural ecosystems and wildlife corridors will be bisected and harmed.

What is Happening in Wendell and Pelham

The populations of both Wendell and Pelham are increasing slowly but steadily in a region where the central cities are losing population. This increase is small compared to many areas of the country, and locally compared to Belchertown.

Since the end of World War II, average household size throughout the country, including that in Wendell and Pelham, is steadily getting smaller but the houses themselves and the land disturbed for each house, driveway, and lot is getting bigger. As a result, more and more land is being consumed for housing regardless of population changes.

It is the pattern of development of all of these new homes and developed areas, not the population change, which is changing the look, feel, and ecological integrity of the communities and the forest ecosystem. After all, Wendell's population in 1810 was almost the same as the current population, but twice what it was in 1910. The historic pattern, however, had people living on farms and in forests all over town and working their land, not commuting outside the community. It is only in the last few decades that Wendell and Pelham have begun developing a suburban look, both in terms of the look of new housing and the reduction in the proportion of residents with an intimate connection to the land.

Population Growth

	2005	2000	1990	Annual Increase
Wendell	1,036	986	899	1%
Pelham	1,416	1,403	1,373	0.21%

Source: U.S Census

The Land

A majority of the land in both Wendell and Pelham is permanently protected forest land. The Commonwealth of Massachusetts (Boston's water supply and state forest land), the Town of Amherst (Amherst's water supply), Massachusetts Audubon Society, the towns, and others have protected vast tracts of land. The management of these properties varies, in terms of public access, recreation uses, and timber harvesting. Consistent, though, is the preservation of the large intact ecological corridor in the Pelham Hills.

Much of the land in private hands is in active forest management, with a small amount currently being farmed. Some of this land is subject to permanent restrictions. Much of this land is covered by the state's current use taxation program (Chapter 61, 61A, and 61B), which taxes the land based on its current uses instead of its development value. The vast majority of private land, however, is at some risk of development—development that could be inconsistent with forest conservation. There are some active efforts to preserve more land, through the towns, private land trusts such as the Kestrel Land Trust and Massachusetts Audubon Society, and some state actions.

Development is still occuring on a small scale, because of limited parcels on the market, steep slopes, poor soils, and strong regulations.

The Communities Speak

At board meetings and community forums, residents agree on far more than they disagree. First, community members agree that the rural character, working landscapes, forested open spaces, and special magical places are the best physical characteristics of the Pelham Hills.

We are a rural community. That is what defines us.

We are part of a bioreserve. We don't want development to break that connection.

Second, community members agree that the Pelham Hills are more than just a collection of rich natural resources. Wendell and Pelham in particular have a strong sense of community, dedicated community members, and diversity not common in small rural communities.

We value the intimate relationship with the land… We want to keep that connection.

People live and work here… we are not and don't want to be a bedroom community.

Third, community members agree that even with large amounts of protected open space, poorly planned and suburban development can harm ecological integrity and wildlife corridors, economically viable working landscapes, and rural character.

I no longer recognize many of the people here. It makes me realize how much the community I grew up in has changed.

Finally, the lack of business opportunities hurts residents and municipal budgets alike.

People used to work here and volunteer as firefighters here. Now many of them go elsewhere to work and just sleep here.

We are going bankrupt. We need more business opportunities. We need more home-based businesses.

There is strong consensus about the need to conserve forest land. There are significant differences, however, about when and how regulations should be used to preserve forest land. The first area of disagreement is whether residential development helps or hurts the tax base, once the cost of providing services to residents is included. (Both sides can find studies to support their positions. See, for example the Donahue Institute's reports on mixed-income projects and the American Farmland Trust's cost of services.)

We need more residential development. More residents will share the burden of maintaining town services. These are fixed costs.

We lose money with each new resident. Each residential use costs us $1.15 for each $1.00 they pay in taxes.

The second significant area of disagreement is about how far land use regulations should go to regulate property, especially if regulations may reduce the value of some land

People should be able to do what they want with their land. We need the tax base.

The final significant area of disagreement is whether growth should be channeled to specific areas. Some residents want to treat all areas equally and believe that site constraints make all areas hard to develop. Others stress that development should be directed to create a sense of place.

We should be steering residential growth/a village to the area around the Common/town community center.

A sewer line from (Amherst/Erving) can channel development in some areas.

The community should not be frozen in time, but development must preserve what is good.

Ultimately, what many people said in many different ways is that they want to preserve the rural character of their town, while also addressing other community needs. Participants stressed two goals of forest conservation. First, preserving forests, whether managed or not, is critical to the character, sense of place, and economy of the Pelham Hills. Second, preserving large intact blocks of forest land is critical to ecological integrity and water supply protection, whether these parcels are used by the public or not.

sus•stāin'a•ble

Sustainability can be defined as developing our communities in the interest of our children, our children's children, and all future generations. There are many aspects of sustainability. The United Nations World Commission on Environment and Development, or Brundtland Commission, defines sustainability as having three core elements:

Environment and Land Use: Using the land in a way which is sensitive to the natural and built environment.
Economic Prosperity: Ensuring our people have a healthy economy.
Equity and Community: Ensuring that all have the opportunity for society's benefits.

Most Wendell and Pelham residents clearly want to be sustainable communities and provide for future generations. There remains, however, a divide in both communities. Many residents focus on the environmental aspects of sustainability and favor preservation and focus on protecting the natural ecosystems for future generations. Many other residents focus on the economic prosperity aspects of sustainability and want to ensure that their communities are not just high-tax bedroom communities for economic engines elsewhere. Finally, many residents are searching for a middle ground that allows development in a way that keeps working landscapes productive and conserves resources for future generations while developing responsibly to create some jobs and allow a mixed-income community to thrive.

Wendell and Pelham residents must address a few questions to become sustainable communities:

- How is our land developed?
- How can our vast interconnected natural ecosystem remain healthy?
- Where should development be steered?
- How can our community be more than a bedroom community with some forest?
- What model, besides preserving land, can benefit all residents and not leave some out in the cold?

Both Wendell's and Pelham's Visions (see following pages) and public and board comments received (see end of report) during this forest conservation project are consistent with sustainability. The existing regulatory structures, however, do not necessarily achieve these lofty goals.

Wendell Vision (*Wendell Community Development Plan*, June 2004)

Our primary vision for the Town of Wendell is to preserve its rural and unique community character while seeking to improve the quality of life for its residents. We recognize that the careful management of land use and population growth will help the town protect its natural, historic, and scenic assets while enhancing people's abilities to enjoy these valuable resources. We envision land planning and regulation of development as key tools to meet our specific community needs, while at the same time allowing for a more controlled population increase over the long term that is sustainable for the Town of Wendell.

Through careful and sustained proactive planning, we hope to encourage the kinds of land use which will maintain and improve the overall health and well-being of the aquatic, forest, and open-field ecosystems, and wildlife habitats, and which will help the town to permanently protect and manage its open spaces. The Open Space and Recreation Plan for Wendell will contribute to this undertaking. We actively support the development of small-scale commercial, economic growth as well as encourage cottage industries that will blend with Wendell's rural environment. We recognize the need to research the status and condition of our current road situation and to consider access to public transportation and to current and future bicycle paths and trails within the region. Future planning should consider the adverse impacts that a rising tax rate has upon residents with limited incomes...

Goal—To preserve Wendell's rural character by preserving its diversity of wildlife and open spaces.
- *Preserve and increase amount of protected land.*
- *Create greenways both within town and connecting with greenways in surrounding towns.*
- *Enhance scenic roads bylaws to further protect byways.*
- *Preserve the dark night sky by minimizing light pollution.*
- *Promote community based ecological education and related activities.*
- *Insure that the Town's Zoning Bylaws continue to be protective of natural resources and quality of life.*
- *Implement the Open Space Plan.*

Goal—Diversify tax base and increase community services through the facilitation of economic development.
- *Promote the development of cottage industries and the appropriate use of local resources.*
- *Promote ecologically sound development.*
- *Maintain and improve appropriate bylaws to ensure sound development practices.*
- *Create business district(s) to allow the separation of businesses from land uses with which they may not be entirely compatible, and to encourage the establishment of new businesses.*
- *Explore alternatives to present tax and revenue structure.*

Goal—Improve transportation options for residents
- *Maintain roadways in keeping with their designation as scenic and rural roads.*
- *Retain and maintain dirt roads.*
- *Determine the legal status of all roads to clarify issues of development and maintenance.*
- *Increase access to coordinated and/or public transport, especially for seniors and keep the community informed of these options.*
- *Explore means to control the speed of traffic, including education, traffic calming and enforcement of speed limits.*

Goal—To encourage diverse housing and rental options while preserving Wendell's rural character and unique community.
- *Encourage efforts to make Wendell's housing inventory both affordable and energy efficient.*
- *Encourage the development of housing for our elders and low to moderately priced rental units.*
- *Review current subdivision regulations and cluster development options.*
- *Determine a sustainable rate of residential growth, that the town and its residents can mange, without creating adverse fiscal impacts, to aid in the development of future bylaws.*
- *Consider the creation of traditional neighborhood districts that allow a mix of residential and business land uses.*

Analysis- Wendell Plans

Wendell's past plans have consistently identified the need to protect intact ecosystems and large blocks of forest land. Wendell's plans have shown remarkable foresight that some development will occur. The plans have identified appropriate locations for such development. The plans have not been at the detail, however, necessary to build public support and have not addressed all issues, especially the location of prime agricultural soils.

Wendell's plans make it clear that the town, not developers, should determine the best place for development, and the plans have identified those locations. **Much of these plans, however, especially discussions of spatial differences where growth could occur, have not yet been implemented. It does not appear that there is a clear consensus in Wendell as to where development should be channeled.**

Community members consistently say that they love the village center/town commons/country store and post office area. If this area magically disappeared tomorrow, would the current zoning easily allow this type of development pattern again? Not easily. The vision created by zoning is not always consistent with the community vision.

If the concern is preservation of prime agricultural land, it would be possible to create uses to support the existing village uses, such as senior housing, in the area immediately west of the town comments or in the area near the country store. Even if there was consensus that these uses are appropriate for farmland, the total footprint could be very small, since after all that is one of the defining features of a village center.

Town of Wendell Community Vision of the Future

This 1990 plan, an outgrowth of the Wendell Places of the Heart planning process, identified "areas for controlled growth," areas where growth might be appropriate within Wendell:

1. *Town Center—"A compatible mix of uses, including limited business, a denser mix of housing than elsewhere in town, and careful attention to the balance of cluster building and open space will keep this 'heart of hearts' a vital community center."*
2. *Locks Village Road—"the areas between town center and the fork with Locks Hill Road (including the Country Store) may be able to handle additional clustered homes."*
3. *Montague Road, Adjacent to Town Center—"two parcels on either size of Montague Road provide approximately 100 acres of buildable land."*
4. *New Salem Road, South of Morse Village Road—"100 acres…nearly 4000 feet of road frontage present development options.*
5. *New Salem/Jennison Road intersection—"more than 200 acres… makes possible a comprehensive and well-designed development plan.*
6. *Jennison Road—"the areas where most new development is happening…"*
7. *West Road—"The high ridge line and open fields of West Road invite development."*
8. *Montague Road—"72 acre parcel…where clustered conservation development could work.*
9. *Mormon Hollow—"distant views…historic mix of commercial and residential uses…carefully sited building"*
10. *New Salem Road—"Two buildable areas…development clustered…with bands of open space."*
11. *The Depot—"Major gateway to the town…preserve its historic and current role, with a mix of commercial and residential uses.*"

Western Millers River Watershed Growth Management Plan

This 2002 plan, drafted by the Franklin Regional Council of Governments, identified current planning and zoning practices in four communities in the Millers River Watershed, including Wendell. The plan was designed as a key step towards creating a regional land use plan and exploring ways of improving water quality.

Wendell Open Space and Recreation Plan

The 2002 Wendell Open Space and Recreation Plan is an aggressive plan for preserving additional open space in Wendell. Although vast tracts of Wendell are already permanently protected open space, the plan demonstrates community consensus to consider preserving large forested tracts of land to preserve the environmental integrity of Wendell forests and ecosystems.

The Open Space and Recreation Plan (2002 and map revised 2004) shows four distinct areas of town that are not identified as new potential greenways or priority areas for open space. (See plan below.) These areas are consistent with the development target areas in the Community Development Plan.

Wendell Community Development Plan

The Community Development Plan, drafted by the Franklin Regional Council of Governments for the Town of Wendell in 2004 using a state grant, identified four "areas outside of the potential greenway identified in the Open Space Plan." Two of these areas were identified as "potential neighborhood village center with residential and/or small commercial development. (See plan below for details.)

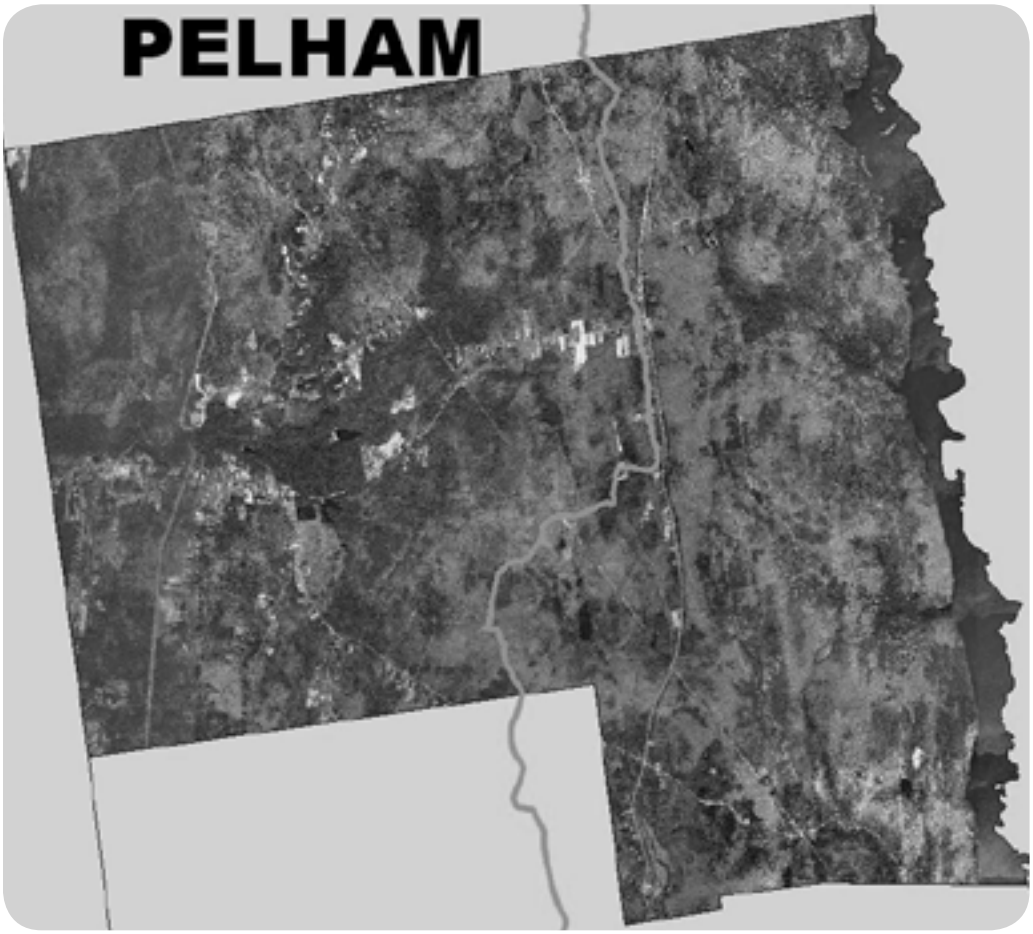
Town of Wendell
Community Development Plan
Development Suitability Map
Legend
Map Sources
June 25, 2004
FRANKLIN REGIONAL COUNCIL OF GOVERNMENTS
1 Mile
0.5
0
0.5
N
W
E
S

Town of Wendell
Open Space and Recreation Plan
Action Plan
With Updated (2004) Open Space Data

Pelham Vision (as adopted by Pelham Selectmen)

Citizens of Pelham are proud of the fact that their town was founded in 1743, making it the first incorporated town between Worcester and the Connecticut River Valley towns. Pelham consists of almost twenty-five square miles of woods, streams, hills and grasslands, making it an ideal place to live and raise a family.

As a result of this historical and environmental heritage, Pelham is committed to continuing to provide its citizens with ecologically sound policies, a fine school system and a safe place to live. Pelham is administered through a participative Town Meeting form of government led by an elected Board of Selectmen, whose members are committed to maintaining a high quality of life provided by, but not limited to, Public Safety (Fire, Police, Medical Response), Public Works, School System, Library and all Town Boards and Committees.



Pelham welcomes and encourages both new and long-time residents to play an active part in Town government and in the various committees that provide the energy to move continuously forward.

Because Pelham has not adopted a comprehensive planning vision, the Pelham Growth Study Committee has worked to identify what residents want. A survey they mailed to all town residents in 2006 identified some areas of consensus. The committee released a press release, stating in part:

About 65 percent of 249 Pelham citizens responding to the mail opinion survey supported more dense development in West Pelham, and to re-authorize construction of duplexes in the town. A 71 percent majority supported creation of large lot "conservation districts" in ecologically fragile sections of the town. Over 56 percent stated that they would like more information about the Community Preservation Act that, if adopted by the town, would provide funding for open space acquisition, historic preservation, and affordable housing.

Support for allowing more dense development in West Pelham was limited to those lots that are already served by the Town of Amherst water system. In addition, a special zoning permit would be required and at least 20% of the housing units would have to meet the state affordable housing standards.

On the question of creating large lot "conservation districts," 71% of those responding would like to see ecologically fragile areas in the town zoned for lot sizes larger than allowed by the current by-law.

Analysis- Pelham Plans

Several planning projects and numerous board discussions have indicated a thoughtful Pelham vision for the future.

Pelham Growth Study Committee and Planning Board

The Pelham Growth Study Committee asked community members to identify where development should occur in Pelham. They found overwhelming community support for forest conservation and relatively little support for a village center in West Pelham. There remains some interest in a village center, however, and it comes up from time to time in Planning Board and other boards' discussions.

Pelham town boards have also discussed open space residential development and other forest conservation and related regulatory approaches. Pelham planning discussions suggest a thoughtful vision for the future, emphasizing protection of ecologically fragile areas and at least thinking about defining an area in which development is encouraged. This vision requires future research and documentation in order to create a clear community consensus and plan.

To date, however, the town has not taken action. Many residents believe that development opportunities are adequately limited by existing wetlands and septic systems. These regulations limit development on sites with wet and shallow soils, steep slopes, and wetlands, site constraints that exist on most parcels of land in Pelham.

Pelham signed onto this Forest Conservation Project because of a concern that growth pressures are rising and eventually will need to be addressed.

Pelham Open Space and Recreation Plan

Like Wendell, a very large proportion of Pelham is already permanently protected open space. Like Wendell, an apparent majority of Pelham residents are still interested in more open space in spite of the amount of land already preserved.

The 2002 Pelham Open Space and Recreation Plan creates an action plan for preserving additional open space in Pelham.

Bringing A Focus To The Community: A Comprehensive Plan For Town of Pelham

In 1997, Pelham worked with the University of Massachusetts Center for Economic Development to write a comprehensive plan. The plan examines a variety of open space preservation efforts and development pattern options for the town to consider. Many of these recommendations have never been acted on.

Analysis- Forest Conservation Regulatory Efforts

Wendell and Pelham both have logical and coherent land use bylaws and regulations. All of the bylaws and regulations have major strengths, and all of them provide opportunity for improvement.

Overall, current Wendell and Pelham bylaws and regulations do two things very well. First, these standards make it difficult for large scale development on the steep slopes, wetlands, wetland buffers, or poorly drained and wet soils. Given how common these conditions are in Wendell and Pelham, this is one of the reasons that there has been relatively little development damaging the forest conservation and the rural identity.

Second, the bylaws have, for the most part, allowed the towns to work with cooperative property owners, developers, and land trusts, to create some very good projects. That is, when cooperative project proponents want to do good projects, the bylaws generally allow this.

Bylaws: Town "laws" passed by town meeting. The authority to pass bylaws comes from state enabling statutes, such as the Zoning Enabling Act (MGL c. 40A), or simply from the Massachusetts constitution (as amended 1966), which gives municipalities the authority to adopt any bylaw not inconsistent with the state constitution or state laws. Recently the Massachusetts Supreme Judicial Court (Durand v. Bellingham, 440 Mass 45, 2003) went out of their way to emphasize that home rule authorizes local government actions not specifically denied or preempted, even absent a specific grant of authority. "We conclude that the proper focus of review of a zoning enactment is whether it violates State law or constitutional provisions, is arbitrary or unreasonable, or is substantially unrelated to the public health, safety, or general welfare."

Regulations: Regulations are adopted by administrative bodies and are only allowed when that authority is specifically spelled out in a state statute or town bylaw. For example:

- *State statutes authorize Boards of Health to adopt septic system regulations and Planning Boards to adopt subdivision regulations.*
- *Local bylaws, such as a wetlands bylaw, can include specific authority for a board to adopt regulations.*

Two clear areas of weakness exist. First, except for Wendell's Conservation Development (cluster) standards, the regulatory scheme does not have a strong focus on forest conservation. If one of the mantras of forest conservation is to preserve large blocks of undeveloped forest, there is nothing in most of the standards which indicates that this is a goal, much less anything to provide the teeth to achieve this goal.

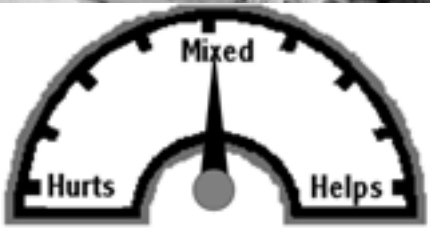
Second, the regulatory scheme does not provide a clear vision of what kind of towns Wendell and Pelham want to be. The vision that is reflected in town plans and represented at board and community meetings is not being shared through town bylaws. Both towns have seen relatively limited development, in part because of their strict standards, but in large part because neither town has yet seen large tracts of forest land brought onto the market by a large scale developer.

Analysis-- Wendell's Forest Conservation Regulatory Efforts

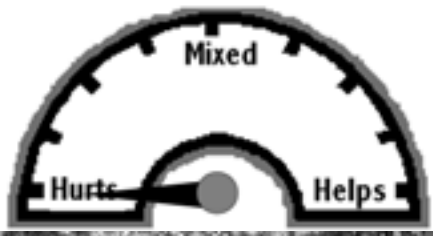
Analysis of Wendell Wetlands Bylaw

Wendell has a comprehensive wetlands bylaw that addresses gaps in the state wetlands protection statute and regulations. Isolated wetlands and buffers around floodplains, which are not otherwise regulated by the state, are protected in Wendell. Enforcement and management provisions that do not exist at the state level have also been added.

These regulations, however, do not integrate a forest conservation perspective. Regulations are applied uniformly throughout Wendell, regardless of different types of wetlands and their value to forest conservation. For example, arguably a vernal pool with state-listed endangered species in the middle of a large continuous block of forest land is more valuable than a 100 square foot wetland in the middle of a farmer's field, and yet the standards for the buffers around the resources are the same.



Analysis of Wendell Septic System Regulations



The Board of Health is planning on repealing their regulations that govern the design of on-site sewage disposal and treatment systems (septic systems). They have found, probably correctly so, that the current regulations add additional setback requirements and related standards that are not supported by widely accepted science.

The Board indicated that they do not feel the need for any supplemental regulations. Their intention is to rely only on the Massachusetts Department of Environmental Protection's regulations for the design of such systems, 310 CMR 15, Title 5.

There are, of course, potential regulations that could fill gaps in state regulations and be supported by science and recent technological advances. Arguably, state regulations focus on **safe wastewater disposal** but are weaker on providing the most **effective wastewater treatment.** (See model regulations for details.)

Analysis of Wendell Zoning Bylaw

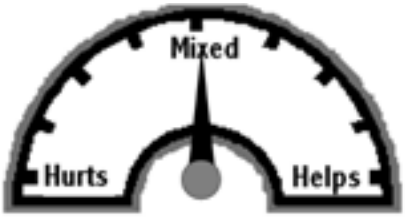
Wendell's current zoning bylaw is very well written and partially supports a forest conservation vision. Conservation Development allows developers to work with the town to create desirable projects that could preserve large tracts of sensitive and intact forest land. The current Large Development Review section provides a tool to require mitigation of some adverse impacts.

The zoning does not, however, ensure forest conservation; it simply provides some flexibility for conservation-minded developers.

Clarity and Intent

Although the zoning is very well written, greater clarity of language and/or language changes could probably better define the community's intent:

1. **Aquifer** definition does not help the regulated public understand if their land is above an aquifer. The "Potentially Productive Aquifer (PPA)" definition used by the state, includes all aquifers delineated by the USGS as high or medium yield, but Wendell should probably exclude "non-potential drinking water source areas," a subset of PPAs that cannot be used for drinking water. These areas have been mapped.
2. **Drinking Water Supply Area** is not currently defined. A definition would include both aquifer above and watersheds that drain into community surface water supplies. Creating standards for development in these areas in special permit criteria would give this definition some teeth.
3. **Secondary Dwellings** are defined as 800 square feet, which is the size of a very comfortable one bedroom. Some communities find that 900 square feet, the size of a small two bedroom, works well.
4. **Special Permit and Site Plan Review Criteria** includes "impacts on the natural environment", but the section is too terse for a project proponent to understand what the town wants.
5. **Table of use** regulations, especially Industry (e.g., chlorine or bleaching powder manufacture and match manufacture) should be revised. The table of regulations should be modernized to better define in categories what is allowed and what is not, instead of trying to list every use and, of necessity, leaving many uses out.



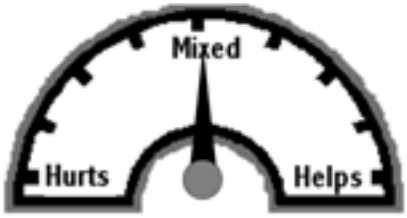
Community Vision and Forest Conservation
The big question is: What kind of development does the town want? The development pattern that the zoning is creating is not consistent with community vision or forest conservation.

1. **Dimensional** standards create a minimum lot size of three acres with 200 feet of frontage. If the currently unprotected areas of Wendell were platted into lots like this, there would be no additional forest conservation in town. Yet this is the pattern of development that the zoning is encouraging.
2. **Back Lot Development**, called flag lots or pork chop lots in other communities, can allow new housing without the creation of new roads through intact forests and while preserving the rural look and feel of town by hiding new homes in the woods. These rules, however, may be allowing more development deeper, up to a ¼ mile, into previously untouched forested areas. Wendell's approach in limiting longer driveways and ensuring a low density of development minimizes some of the potential adverse impacts of this approach.
3. **Conservation Development**, along with Large Development Review, is Wendell's strongest regulatory forest conservation effort and allows development consistent with forest conservation. It also requires a special permit, requires developers to figure out the lot yield they would get from a conventional development, and requires street frontage. These three requirements will discourage many developers from pursuing this option.
4. **Phased Growth Bylaw** limits the rate of development to levels that the town can handle and provides incentives for affordable housing and conservation development (which are completely or partially exempt from caps on housing permits). The Supreme Judicial Court recently invalidated a phased growth bylaw which was permanent and not simply designed to provide breathing room to address planning, bylaw, or infrastructure needs (Zuckerman v. Hadley, 442 Mass. 511, 2004). It seems unlikely that Wendell has the development pressures which create the need for a phased growth bylaw. Nor does it seem likely that legally or politically defending the bylaw is as useful as other forest conservation efforts.

5. **Large Development Review** ensures that projects that are large by Wendell standards (four lots or four dwelling units in a two year period), receive sufficient review to ensure that adverse impacts are mitigated. Unlike the phased growth bylaw, Wendell does not provide an exemption for preferred projects such as affordable housing or conservation development.
6. **Environmental Performance Standards** are weak and do not serve forest conservation.
7. **There is only one zoning district in Wendell.** This means that zoning standards are exactly the same everywhere in town and it is difficult to direct development away from very sensitive lands, like those areas most appropriate for forest conservation, and towards areas where it is appropriate. Areas which the Wendell Community Vision (Places of the Heart), the Wendell Community Development Plan, and the Wendell Open Space and Recreation Plan identified as appropriate for development have the same standards as the areas for which those plans said are inappropriate for development. Those recommendations should be compared to other town goals, such as preserving prime agricultural soils, in identifying zoning district options.

(See also the *Western Millers River Watershed Growth Management Plan*.)

Analysis of Wendell Subdivision Regulations



Wendell's subdivision regulations are well written and generally clear. In a very few areas (e.g., no dead-end streets) they provide strong support for forest conservation efforts.

The subdivision regulations are especially strong in some areas:

1. Procedural and substantive requirements are generally clear.
2. Developers have a fee incentive to engage the Planning Board in the preliminary subdivision stage.
3. The prohibition on dead-end streets, along with a standard in case the board grants a waiver, is superb.

There are some technical and character of the community areas that could be improved:

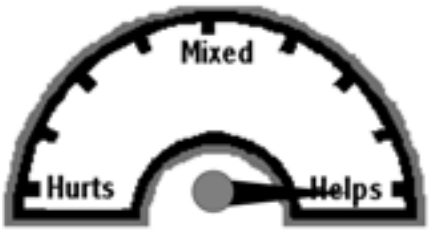
1. A good editing is needed. (E.g., use DEP instead of DEQE and correct sewerage language that mixes sanitary sewage disposal with storm water and puts sewage in two sections.)
2. Regulations balance public safety and the rural character of roads. The allowed angle of street intersections may lose that balance and allows unsafe conditions. On the other hand, the street jogs requirement appears excessive.
3. The technical design guidelines are very limited. While it is good not to repeat standard engineering practices, the approach here leaves too much to outside design manuals that are not appropriate in a rural area. For example, does Wendell want suburban-style gently curving streets that don't match existing streets?
4. The regulations assume sidewalks, which is admirable in more urban and suburban areas. Many rural areas and some new urban neighborhoods (see a whole body of literature on "shared space") find that designing streets with a maximum design speed of 15 miles per hour, reinforced by stringent traffic calming, avoids the needs for sidewalks. In some communities, especially co-housing communities, however, parking may be clustered in one area and sidewalks used to connect buildings together and with parking.
5. The commitment to metric is admirable.
6. The classification of streets is impermissibly vague. It is probably better to classify based on traffic volumes or other objective standards.
7. Asking a developer to potentially pay for an outside reviewer to determine if an ANR complies with zoning is an appealing approach. Since the state standard for ANR approvals does not require compliance with zoning, however, this is pushing the envelope. It would be easier to require the surveyor to stamp their plan with a statement that "endorsement of the plan does not imply that the lot is buildable."
8. The digital standards could be clearer and stronger. Vertical and horizontal datum should be specified. All plans should be filed in an electronic format, using MassGIS standards, to allow for future use of the data.
9. The section on performance guarantees is old and should be strengthened.

The regulations do not directly address forest conservation objectives. (These options will be discussed in great detail later in this report). For example:

1. The filing requirements ask for much information, but do not require identification or assessment of ecological and scenic resources, including plant and animal habitat and wildlife corridors.
2. The standards require an analysis of impacts on scenic and natural resources, but there are no standards for requiring that roads be laid out to minimize damage to these resources.
3. The standards do not require an alternatives assessment to consider possible road alignments to avoid sensitive resources or to consider different zoning options (e.g., large lot subdivision, back lot projects, or conservation development).
4. There is no standard for granting waiver, except for dead-end streets. Some communities state that no waivers will be granted unless the waiver serves a clear public benefit (e.g. avoiding sensitive resources or resulting in large tracts of land being preserved).

Analysis- Pelham's Forest Conservation Regulatory Efforts

Analysis of Pelham Wetlands Bylaw

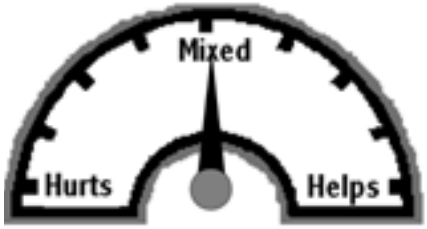


Pelham's Wetlands Protection Bylaw (Chapter 119) supplements the Massachusetts Wetland Protection Act and the regulations promulgated under the Act.

The Pelham bylaw fills some of the holes in state regulations and is fairly conventional in its approach:

1. The bylaw regulates isolated wetlands and temporary ponds, which includes vernal pools, thereby addressing the major gap in the state regulatory scheme.
2. The bylaw does not create stricter standards for vernal pools than other wetlands, even though they are arguably the rarest and most threatened habitat in Western Massachusetts.
3. The bylaw creates a single standard for the entire town, not addressing that wetlands in some areas of the community may be more sensitive than in other areas.
4. The bylaw includes a relatively weak performance guarantee section.
5. The bylaw could use some minor editing (e.g. referring to Hampshire County, which no longer exists).

Analysis of Pelham Septic System Regulations



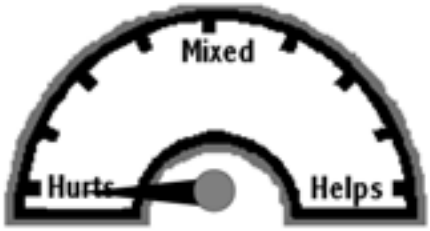
Pelham's Board of Health has adopted stricter standards for on-site sewage disposal than the state's minimum standards. These standards are the same throughout Pelham, with no differences between sensitive and less sensitive areas. The two most limiting standards are:

1. A required six foot vertical separation between the bottom of a leach field and seasonal high groundwater. This has the effect of dramatically reducing the development potential of land everywhere in town.
2. Prohibition on the use of fill ("mound systems") to overcome limited depth to groundwater and ledge.

These standards provides some limited protection of groundwater, but not nearly as much protection as other techniques. On sands and gravels, soils with excessive permeability, the extra separation provides very little added treatment time, and it provides that treatment in soils deeper in the ground that are more biologically sterile. Requiring larger systems, requiring pressure dosed and distributed systems, and providing systems designed around the treatment capacity of the soils may be a much more effective method at ensuring good wastewater treatment.

The primary effect of the regulations is to reduce development, and not necessarily to steer development to patterns and locations that fit any town vision.

Analysis of Pelham Zoning Bylaw



Pelham's current zoning is clear and easy to follow. Its large minimum lot size befits a community where a majority of the land is within watersheds feeding public drinking water supplies (the Quabbin Reservoir, feeding much of the Boston metropolitan area, and Amherst's water supply).

Limited development potential, steep slopes, wet soils, extensive wetlands, and strict septic system regulations and wetlands bylaws, have minimized damage to forest conservation resources to date. Strong boards with a strong forest conservation vision have worked with developers and land trusts to preserve intact forest ecosystems. The zoning itself, absent strong boards and cooperative developers and land trust partners, does not provide a forest conservation vision.

Clarity and Intent

Although the zoning is generally clear, there are areas that are not as clear as they could be:

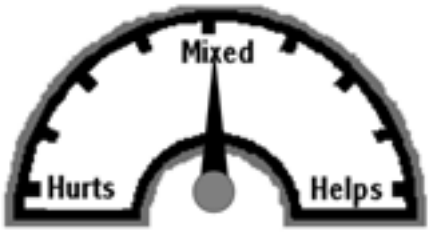
1. The **Table of Dimensional Regulations** is easy to read, but there are some dimensional standards elsewhere in zoning that are not reflected in the table (e.g., exceptions by special permit, accessory structures, etc.).
2. The **Water Supply Protection District** language is unclear. The district is not part of the official zoning map. It covers the entire town, and yet there is a provision for landowners to dispute the boundaries. The section also has use limitations, but these limitations are not shown in the Schedule of Use Regulations.
3. **Elderly Congregate Housing** is allowed, but it is not clear what this is and what the vision is.
4. **Home occupation permits expire,** but the reasoning is not fully clear. Expiring permits provide the special permit granting authority to adjust permit conditions or deny a renewal if the property owner is not sensitive to neighborhood concerns. Unfortunately, expiring permits make it very hard for property owners to invest in the income producing side of their property with the certainty that the permit will be valid for long enough to recoup their investment.

Community Vision and Forest Conservation

The same bigger question suggested for Wendell applies to Pelham: What kind of development does the town want? The development pattern created by zoning is not consistent with community vision or forest conservation.

1. **The Table of Dimensional and Density Regulations** creates a minimum lot size of 88,000 (just over two acres) with 200 feet of frontage. Although the overall density may be appropriate for a town with such valuable water and ecological resources, if the privately-owned land in Pelham was cut into lots of this size, it would be hard to argue that this divided land and new roads would be consistent with forest and water supply conservation. It may be that site limitations make this development pattern impossible with current technology, yet this is the pattern of development that the zoning is encouraging.
2. **Common Access Driveways** presumably reduce the need for new roads, but the vision for these driveways is unclear. Driveways steeper than 8% grade are not allowed (even though Pelham has steeper roads), presumably to limit development, and yet the zoning does not even have a limit as to how long a driveway can be, which allows it to go deep into intact forest land.
3. **The Schedule of Use Regulations** allows very little commercial uses or live/work uses (i.e., more intense in-home commercial uses than home occupation) and zoning does not provide for a village center. Some board members and residents, however, have stressed that additional commercial development is critical for the town's tax base, and town zoning makes this kind of development difficult or impossible.
4. **Environmental Performance Standards** are weak and have no forest conservation preservation.
5. **Zoning Districts** and standards are the same for the most sensitive forest and ecological resources as they are for the least sensitive resources.

Analysis of Pelham Subdivision Regulations



Pelham's subdivision regulations are generally clear. They are based on an older model, with identical language and diagrams, which was first used in many communities in the Pioneer Valley about two decades ago. Although the regulations have had some amendments since then, with fees increased and other changes, they have not been updated significantly since then and are probably not consistent with how Pelham wants to develop.

The subdivision regulations are especially strong in some areas:

1. They are fairly comprehensive with clear procedural and substantive requirements.
2. They are strict enough to prevent poorly engineered projects.
3. Many projects would require a waiver, allowing for the Planning Board to negotiate for an improved project.

There are some technical matters, including those that protect the character of the community, that could be improved:

1. A good editing is needed (E.g., use DEP instead of DEQE).
2. Regulations balance public safety and the rural character of roads. The width of streets and grades of streets tips the balance to public safety and would create expensive suburban-style roads that would consume land and not reflect the rural character of the community.
3. It is unclear why curbing is assumed for roads.
4. The technical standards do not reflect current practices. For example, requiring only a two and a half foot deep sump in a catch basin without a gas trap or requiring curbing instead of low-impact development is not in keeping with standard designs to protect water quality benefits.
5. The requirement for a letter of credit with preliminary subdivision application is inexplicable. The requirement for letters of credit with a definitive subdivision application is an inefficient and expensive way to fund the cost of town consultants.
6. The digital standards are needed and clear vertical and horizontal datum should be specified. All plans should be filed in an electronic format, using MassGIS standards, to allow for future use of the data.
7. The section on performance guarantees is old and should be strengthened.

The regulations do not directly address forest conservation objectives. (These options will be discussed in detail later in this report). For example:

1. The filing requirements ask for much information, but do not require identification or assessment of ecological and scenic resources, including plant and animal habitat and wildlife corridors.
2. The standards require an analysis of impacts on scenic and natural resources, but there are no standards for requiring that roads be laid out to minimize damage to these resources.
3. The standards do not require an alternatives assessment to consider possible road alignments to avoid sensitive resources or to consider different zoning options (e.g., large lot subdivision, back lot projects, or conservation development).
4. The allowed length of a dead-end street is very long for a community trying to preserve forest land.

Analysis- Other Regulatory Models

Regulatory models with relevance to forest conservation abound. Many of these models are variations on a few themes discussed in this report. The models in this report build on dozens of other models, sometimes pulling in concepts and sometimes pulling in specific sections verbatim. The Options section of this report cites sources and other common models.

Models used in this report were selected based on the challenges and the vision provided by Wendell and Pelham town boards and from their public workshops. In addition, both towns stressed the need to have bylaws and regulations that the public could understand.

Other models that are worth looking at include:

- **Massachusetts Smart Growth Tool Kit**, especially Transfer of Development Rights and Open Space Residential Development. These are good generic models, although they are written for a suburban, not rural, audience.
- Massachusetts **Metropolitan Area Planning Council (MAPC) Open Space Residential Development** model. Another very good generic model also written for a suburban audience.
- **Green Neighborhoods/Growing Greener** promoted by the Massachusetts Office of Coastal Zone Management and by Randall Arendt in several publications, most recently *Growing Greener*, is a traditional good generic Open Space Residential Development model.
- **Massachusetts Office of Coastal Zone Management Low Impact Development models**. Focused on reducing stormwater impacts of new projects.
- **Shutesbury's 2007 proposed zoning**, which has been leading the charge to use zoning to address forest conservation issues in the Pelham Hills. Very good and relevant model. Its comprehensive nature and complexity has opened it to criticisms from the development community.
- **Developer models**, often variation on Open Space Residential Development, that attempt to find better development models without losing any development value. This includes, for example, Mark Bobroski's **Flexible Development** model and the A.D. Makepeace **Traditional Rural Village Development** model. These models have strong elements, but not necessarily a strong forest conservation focus.
- **Citizen Planning Training Collaborative** and the **Massachusetts Attorney General's Municipal Law Unit web sites** list many community bylaws that can be used as models.

Some regulatory models are not appropriate for the Pelham Hills, although even these models have elements that are appropriate.

The Bobrowski Flexible Development model is a suburban cluster bylaw. While this bylaw could help create open space, it does not require or even create regulatory incentives for forest conservation or preservation of quality open space. Requiring a special permit for the desired development pattern and allowing traditional cookie cutter development as of-right, as the Flexible Development model allows, is a backward approach that effectively discourages what a town says they want.

The Makepeace Traditional Rural Village Development model is designed for huge projects with a complexity not practical for the small landowners and communities in the Pelham Hills.

For details see: Lacy, Jeff. Analysis of Bobrowski and Makepeace Models: Are They Right for Rural Western Massachusetts.

Analysis-- Wendell and Pelham Forest Conservation Public Policy

Both Wendell and Pelham are interested and committed to forest conservation. In addition to regulatory efforts (discussed above) the communities have taken other steps to promote forest conservation. Their most recent step was applying for the Massachusetts Smart Growth Assistance Grant which funded this project.

Wendell and Pelham non-regulatory actions towards forest conservation have already included:

1. **Talking the talk** about forest conservation by all of the land use boards. Even when they do not have any regulatory teeth, the boards have worked with property owners to pass on the message of forest conservation.
2. **Board trainings and community forums** to educate both board members and the public on forest conservation and related planning efforts.
3. **Minimize roads**, both for financial and forest conservation reasons.
4. **Massachusetts Current Use Taxation programs,** Chapters 61, 61A, and 61B, provide options for landowners throughout the state. Town officials have embraced the programs.
5. **Town open space acquisitions**, most recently in Wendell, permanently protect open space.
6. **Partnerships with land trusts and related conservation Partnerships** (including Mount Grace Land Conservation Trust and Massachusetts Audubon Society in Wendell, the Kestrel Trust in Pelham, and the North Quabbin Regional Landscape Partnership and Valley Land Fund in both towns) by town officials and by individual citizens, to create limited development projects and straight preservation projects that the towns could not do by themselves.
7. **Partnerships with public conservation agencies** (including the Massachusetts Department of Conservation and Recreation in both communities and the Town of Amherst in Pelham) have resulted in forest conservation land preservation and land management.

> *In Colonial times, towns held a right of first refusal on lands granted to new settlers. This practice prevented land speculation and promoted long term stability in the community.*
> *---Mount Grace Land Conservation Trust*

Current Use Land Taxation Programs

In Massachusetts, property is generally taxed at its "highest and best use," that is the highest monetary value that the free market would support. This is not always the best use from a societal perspective. To avoid putting pressure on property owners to develop their property, to actually reap the highest and best use that property tax is based on, Massachusetts has three current use taxation programs.

Under these programs, property owners can voluntarily sign up to pay taxes based on the value of the property as forest land (Massachusetts General Law Chapter 61), the value of the property for agriculture (MGL Chapter 61A) or the value of the use for recreation (MGL Chapter 61B). The rules and taxation formula under each Chapter Land program vary slightly, but in return for keeping land in forest, agriculture, or recreation for a given time period, taxes are dramatically lower. A property owner can remove their land from the program by paying back taxes.

In return for reduced property taxes, the municipality gets a right-of-first refusal, which they can assign to a non-profit conservation group or government agency, to purchase the property if it is sold or converted to a non-chapter land use. If the option is used, most of the property must be conserved, but limited development projects are allowed.

Valley Land Fund
preserving the special places of the Connecticut River Valley

Mass Audubon
Protecting the Nature of Massachusetts

THE KESTREL TRUST
Salut Naturae Salus Populi

Mount Grace Land Conservation Trust
twenty years

NORTH QUABBIN
Regional Landscape Partnership

dcr Department of Conservation and Recreation

Options- Purchase of Interests in Land

The most effective, and the most expensive, way to preserve intact blocks of forest and other sensitive land is to simply purchase it. Purchasing the property allows near total management control and provides the option to allow or exclude public access. The expense, however, dictates that purchases of land must be prioritized to match local resources. Acquiring land does not necessarily guarantee that the land will create direct local economic benefits or that it will be actively managed for forest production.

Many entities focus on fee-ownership for parcels where public use or total management control are critical or where land prices are very low, but they rely on less-than-fee interests for other parcels (see sidebar for details). A conservation restrictions (CR) or agricultural preservation restriction (APR) is often a more cost-effective way to preserve land forever. Less-than-fee purchases can ensure that management objectives are met, while allowing the property owner to use the property in an economically productive manner, and pay taxes, consistent with the overall management objectives. Costs, management objectives, and the property owner's desires all factor into deciding what interests in land should be purchased.

Interests in Property

Property ownership can be thought about as different "rights" that are often bundled together.

"Fee-simple" or "fee" ownership: Ownership of full title and the basic bundle of interests and rights to a property. Most homeowners own their house in fee, with all of the rights held together.

"Less-than-fee" ownership: Ownership of some of the rights to land, such as the right to log (logging easement) or cross property (right-of-way) not owned in fee. Less-than-fee rights include such things as easements, deed restrictions, covenants, licenses, leases, and rights-of-first refusal.

Easement: The property right to use someone else's land for a specific purpose, such as logging. So called "negative" easements are easements to limit the use of the fee ownership, such as a conservation easement.

Conservation Restriction (CR) or Conservation Easement: An easement that protects land to preserve its conservation values. Easements can be common law (that is drafted without a specific authorizing statute and may or may not be permanent) or, in some states governed by a specific statute. In Massachusetts, most CRs are permanent statutory restrictions in which the Secretary of Energy and Environmental Affairs certifies there is a public purpose, which can creates tax benefits and provide a more tested CR format.

Agriculture Preservation Restriction (APR). Agricultural restrictions are a subset of conservation easements. APRs permanently protect farmland from development. They do not merely ensure that property is not developed but typically include an affirmative obligation for the property owner to farm the property. In Massachusetts, most agricultural restrictions are APRs created under a state enabling statute, and are often funded with the help of state funds.

Land or interests in land can be purchased in any number of ways:

1. **Willing buyer/willing seller purchase** of fee and less-than-fee interests. Town funds, Community Preservation Act, state and federal grants, and partnerships with state agencies and non-profit land trusts can all help make these deals happen. Both Wendell and Pelham have experience in this area.
2. **Tax title takings,** whereby a community goes to Land Court to acquire land with back taxes owned, can also be effective. Politically, purchasing land with tax money that might never be paid anyway is often easier than asking for an appropriation. To avoid the costs and time of going to court, however, some communities appropriate money equal to the back taxes for the land purchase. This allows a negotiated deal with the seller; with Town Meeting being assured that as soon as the deal closes the funds will come back to general revenue.
3. **Limited development projects** are often sponsored by landowners, conservation-minded purchasers, land trusts, and municipalities as a way to preserve land and lower the costs. In a limited development project, a small portion of a project is developed; generating funds that help ensure that the vast majority of the property is protected.
4. **Non-cash consideration to sellers** including lifetime tenancy, seller-retained rights (e.g., the right to log forever or for a given time period), naming rights, and any number of creative approaches to meet sellers' needs and lower the cost of land preservation.

The most creative and effective approaches are often combinations of methods. Any purchase begins with:

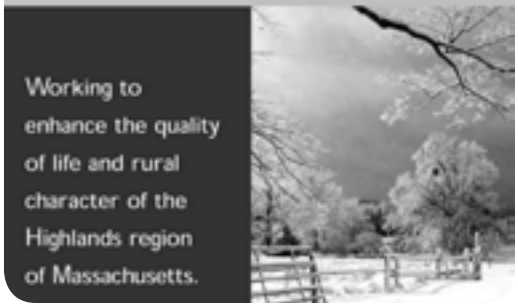
1. **Prioritizing acquisition targets.**
2. **Understanding the core conservation interest in preserving the property.**
3. **Understanding the landowner's interests.**
4. **Understanding available tax and regulatory incentives that can be used.**
5. **Finding the appropriate partnerships to make it happen.**

Options- Forest Conservation Public Actions

Besides purchasing interest in land, other public actions can help preserve intact forests.

1. **Develop markets for local farm and forestry products.** Work with Communities Involved in Sustainable Agriculture (CISA), the North Quabbin Woods project, and the Massachusetts Forestry Association, local stores, and local builders, to add value for local products.
2. **Encourage enrollment in current use taxation programs** (Chapter 61, 61A, and 61B—see previous sidebar). Community outreach and education efforts can increase enrollment in these state-wide programs. Many forest owners do not understand the program and could use training.
3. **Offer Municipal Agricultural Incentive Agreements.** These agreements, conceptualized by the American Farmland Trust, build on the current use tax program. A town or land trust contracts, for an agreed upon price, with a property owner to keep private farm and forest land productive and undeveloped and for a right-of-first refusal on better terms than that from the Chapter 61 programs. In Massachusetts, the Commonwealth sets the rules for how property tax is calculated and abated and municipalities cannot waive property tax, but municipalities can contract to pay for services in the public interest, such as farm and forestry preservation services. The option is very expensive and is probably not applicable town-wide, but could be appropriate for key parcels.
4. **Provide board and public education and collaborative services** to improve the design of public and private projects. The regional planning agencies (Franklin Regional Council of Governments for Wendell and Pioneer Valley Planning Commission for Pelham) and the Citizens Planning Training Collaborative can help.
5. **Educate property owners on forest conservation and land acquisition opportunities** in cooperation with area land trusts (see list under earlier analysis of current forest conservation policy).
6. **Comment of Forest Cutting Plans being reviewed by state foresters** to ensure they are sensitive to wetlands and endangered species issues.
7. **Town boards can create policy statements of what kind of development the town needs** to meet forest conservation goals. Town board policies are not bylaws and cannot be used to support regulatory actions (e.g., Fieldstone Meadows Development Corp. v. Andover Cons. Com., Mass. Appeals Court No. 03-P-517, 10/14/04). On the other hand, the regulated community wants to know what town boards want. For example, the Lincoln and Northampton Planning Boards have had great success in getting affordable housing simply by letting developers know this is what they want, in an era when many towns are afraid of affordable housing.
8. **Create a new model to fund comprehensive forest conservation** and planning services. Emulate the HCI model (see sidebar) using foundation or donor funding based on the region's unique attributes and its ability to preserve the largest bioreserve in the state. There are several land trusts, the North Quabbin Regional Landscape Partnership, and two regional planning agencies in the area. They are all willing, to the extent their resources permit, to enter into partnerships for open space preservation. Their resources are all limited, however, and generally each project must ultimately bring in enough from grants or contributions to pay its own way. Outside funding can help preserve forests of state, if not national, significance. This effort would require a huge volunteer organizing commitment with uncertain results, but the statewide significance of the region is more likely to capture outside funding than similar efforts elsewhere. Such a model could build on existing non-profits in the area or bring in new partners. At one of the public forums, at least one attendee suggested this approach.

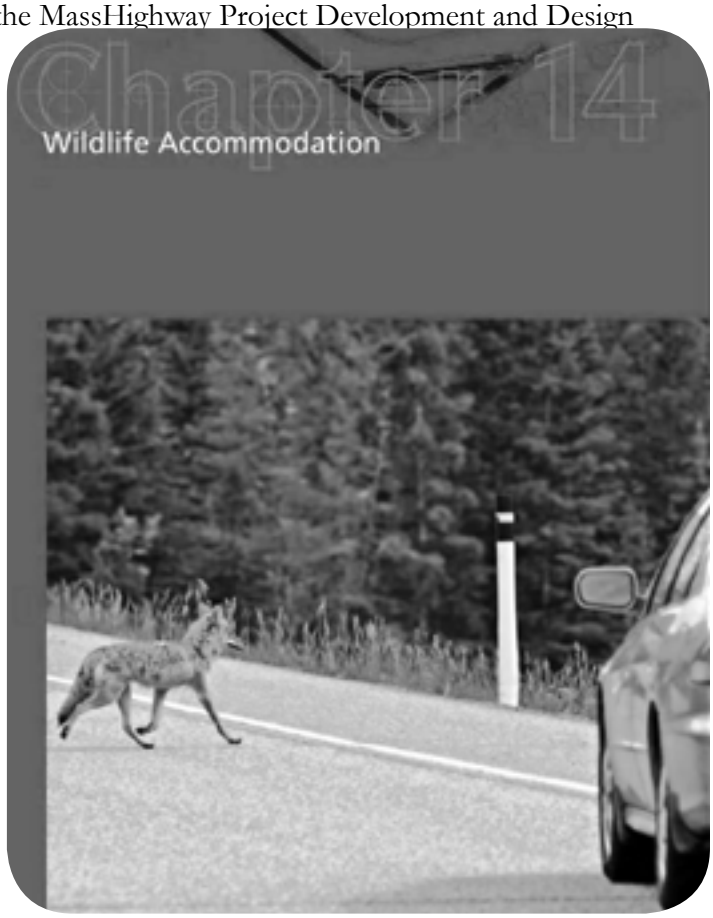
The Highland Communities Initiative (HCI), a foundation-funded part of The Trustees of Reservations (TTOR) in the western hilltowns of the Pioneer Valley, uses a different model. It provides technical services, staffing, and very limited financial assistance "to enhance the quality of life and rural character of the Highlands region of Massachusetts."



Options- Infrastructure Investments and Policy

The treatment of infrastructure is an extremely powerful tool in determining how land gets developed. There are several non-regulatory policy and investments that can strongly influence forest conservation.

1. **Redesign roads to reduce their impact on wetlands and wildlife.** Culverts, road side slopes, bridges, road widths, amphibian tunnels and other features can be designed to reduce road impacts. Massachusetts has become a leader in this area since the adoption of the MassHighway Project Development and Design Guidebook, 2006 edition (see Chapter 14, Wildlife Accommodation). **Do not over-design roads and their footprints.**



2. **Extend sewers to accommodate growth in areas with adequate infrastructure,** thereby reducing development pressures in areas with intact forest resources and fulfilling legal and political obligations not to exclude the ability of new people to move into the community.
   - In Pelham, there are opportunities, but no community consensus, to extend the sewer from Amherst town line to Pelham town center.
   - In Wendell, there are opportunities to extend sewer from Erving into appropriate areas along the Millers River already identified in the Community Development Plan as appropriate for development.
3. **Create Town Meeting road extension and acceptance policies**. These policies can reward strong projects by defining what roads the town will accept, e.g., roads that promote forest conservation, and what the town will not, e.g., dead-end roads or roads in other than target areas of the community. No policy will be binding on future Town Meetings, and the policy should be clear, but it can at least allow developers to plan and create incentives for good projects.
4. **Discontinue old town and county roads when possible.** Towns need to avoid damages, but getting rid of old roads through the forest can dramatically reduce new development deep in the forest.
5. **Require that new development pay for its own infrastructure capital costs.** Generally, development should not overburden town infrastructure, other than economic development projects that have a clear community consensus and will provide a strong tax base for the community. Communities cannot require developers pay ongoing infrastructure maintenance costs, but they do have limited authority to require that they pay initial capital costs, such as upgrading existing roads (for example, Wendell has gravel roads built on inadequate substrate) to accommodate the expected traffic. Massachusetts does not allow communities to charge impact fees, but under zoning communities can set the rules for what infrastructure is necessary to serve a project. This authority is somewhat more limited in subdivision regulations.

Additional references:

- Petersen, Christina, et al. *The Forest Use Manual, Planning, Protection, and Management in Massachusetts.* University of Massachusetts Cooperative Extension System et al.
- Rubenstein, Lynn and Alexandra Dawson, *Discontinuing Town & County Roads,* Highland Communities Initiative.

Options- Regulations and Bylaws

The regulatory options provided below are designed to help communities remain sustainable for future generations. In the context of forest conservation, sustainability means saving intact forest blocks and sensitive ecological resources, encouraging critical economic development activities, and ensuring a land use pattern that serves all without creating an exclusive community. For land in private ownership, this requires income producing working landscapes to avoid pressures to develop the land. For municipalities, in includes attention to municipal financial sustainability to avoid pressures for development and chasing new property tax options.

The basic premise of the regulatory options is that the total regulatory package should work together and be focused on minimizing the overall ecological footprint of development across all regulations and bylaws. For example, preserving a low quality wetlands buffer at the expense of creating more roads to penetrate deeper into a pristine forest increases the environmental footprint of development, but this could be the result if regulations are looked at only from a wetlands perspective.

There is no single regulatory approach to forest conservation that serves as a panacea for all forest conservation issues. Unlike some states, which allow for a unified development code addressing all regulatory issues, Massachusetts's regulatory structure requires multiple regulations and bylaws to address different aspects of planning and land use regulations. For example, most communities have different bylaws or regulations for zoning, subdivisions, septic system design, and wetlands.

From a clarity standpoint, multiple bylaws and regulations administered by multiple boards can be confusing. From a political standpoint, however, this approach makes it easier for Town Meeting to understand each bylaw.

This report does NOT recommend the adoption of all of the regulatory tools provided. Rather, the intention is to provide a shopping list of options to consider. The selected options should still only be adopted at a pace that Town Meeting is comfortable with and not as a single, overwhelming package.

Amendments to the Massachusetts Constitution make Massachusetts a home rule state. This means that municipalities may adopt regulatory bylaws without specific grants of authority from the state legislature.

Home rule bylaws can be written in many ways, including:
Mandatory spatial standards limit where different kinds of development are permitted. This approach is the most direct in mandating development patterns. It is also sometimes the most controversial because it is so clear which land will benefit from the new bylaw and which will lose.
Performance standards regulate how development will occur. Performance standards can appear to be non-controversial by simply creating a standard for permitted development. Requiring a minimum depth to groundwater for septic systems is a performance standard. If that depth does not exist in most areas of a community, however, it may effectively be a spatial standard.
Incentive approaches provide a voluntary approach to development, using a very tempting carrot instead of a stick to fulfill the community vision. Incentive approaches can be extremely successful at encouraging development that is consistent with the community vision, but it can be more of a challenge to discourage development that is inconsistent with that vision.

Many municipalities and landowners forget that Massachusetts is a home rule state. Municipalities have enormous discretion to create their own bylaws that serve their own need. No authorizing statute is required, if the bylaws are not inconsistent with state and federal law.

For many years, Robert Ritchie, Assistant Attorney General and head the AG's Municipal Law Unit, has been preaching a lonely soapbox reminding municipalities and town counsels of their authority. The Massachusetts Supreme Judicial Court recently stepped in and added their own reminder that this is a home rule state with a strong presumption of validity of municipal legislative acts (Durand v. ICD Bellingham, 440 Mass. 45, 2003).

Options- Forest Conservation Model Regulations and Bylaws

Forest conservation could all be focused within one bylaw, presumably zoning. In states that allow unified development bylaws, where all standards are within a single bylaw, this can be clean and clear. Massachusetts, however, divides regulatory authority to different boards and through different bylaws and regulations.

Given the dispersed regulatory authority in Massachusetts, forest conservation is most effective if all applicable bylaws and regulations address forest conservation. This avoids the risk that different parts of a town's regulatory scheme are working at cross purposes.

Bylaw/Regulation	Adopted by	Typically covers	Wendell and Pelham Status
Wetlands	Town Meeting	Gaps in state wetland standards.	Have but no forest conservation focus
On-Site Sewage Disposal	Board of Health	Gaps in state septic system standards.	Have, no forest conservation focus, Wendell may repeal
Subdivision	Planning Board	Standards for roads and infrastructure for new roads to serve new development.	Have but no forest conservation focus
Right-to-Farm	Town Meeting	Prevents nuisance claims and can create agricultural/forestry commission.	Wendell has agricultural commission only
Zoning	Town Meeting	Performance standards, incentives, requirements for how land can be developed. Back lot or flag lot provisions can reduce pressure for new road, but push development further away from existing roads into pristine areas.	Both have but many opportunities for stronger forest conservation focus
Phased Development	Town Meeting	Limit the rate of development. NO model is provided here because it is not especially forest conservation related nor does there appear to be strong need.	Wendell has, Pelham does not.

Each model provided is written independently of the other models, but is designed to work with the other models. A town might adopt one or more of these models. All of the models provided are designed to either **encourage** or **require** forest conservation.

Principles of Rural Zoning

1. Impact is more important than use.
2. Density is more important than lot size
3. Design is more important than density.
4. The countryside should remain largely undeveloped, but not at the expense of the land's economic value.
5. Development should be concentrated in and near existing hamlet centers, following the traditional pattern and layout of hamlets.
6. Development should meet design standards that maintain local community character.
7. Reviewing boards should have discretion to allow what fits into the community, to prohibit what does not, and to condition approvals to make sure that proposed development is appropriate.
8. Small-scale projects need less complicated review than large-scale ones.

"Principles of Rural Zoning" is from:

- Dutchess County Department of Planning and Development, adopted from guidelines prepared by Joel Russell, Chester Chellman III, and Ann Tate. *Rural Development Guidelines*. New York Planning Federation. 1994.

Over half the communities in the Commonwealth authorize Open Space Residential Development (OSRD), or cluster, in their zoning. In these projects, a large portion of the land is permanently protected as open space and homes are built on the remaining portion of the property.

Although many of these bylaws do not focus on forest conservation, many of the elements and the lessons are relevant:

- *There is a strong market demand for these projects*
- *OSRD projects retain their value*
- *The open space provided can be high quality open space, not junk land*
- *OSRD can be optimized to preserve whatever kind of land is most valuable to a community*

For details see: Belansky, Evan and Stacey Justus. *Open Space Residential Development, Four Case Studies. Conservation Subdivision Design Project.* Metropolitan Area Planning Council. 2000.

Model Wetlands Bylaw

This is NOT a complete wetlands bylaw model. It ONLY highlights forest conservation issues and builds on the MACC model (see sidebar).

The **purpose** of this bylaw is to preserve wetlands, water supplies, water quality, plant and animal habitat, natural flood mitigation, related upland resource areas, all of the interests of the state wetlands act, and, indirectly, the large forest blocks in which these resource areas often exist. This bylaw is adopted under Massachusetts constitutional home rule authority and complements and strengthens the wetlands preservation efforts of the Massachusetts Wetlands Protection Act and regulations.

Massachusetts has a comprehensive state wetlands statute and regulations. These standards are written to supplement, not replace, that regulatory scheme.

Also consult the Massachusetts Association of Conservation Commissions' (MACC) comprehesive wetlands bylaw model. This excellent model is in the MACC's Environmental Handbook for Massachusetts Conservation Commissioners (9th Ed.) and available at www.maccweb.org. This section draws on that model and work the author and others have done for the Northampton Wetlands Ordinance.

Definitions

Ecological footprint: The total impact a project has on the natural ecology. In addition to assessing impacts on wetlands, the total impact on the forest ecology and natural systems should be considered in assessing projects and their alternatives.

Wetlands are the most productive ecosystems, but impact assessment must look at the total ecological footprint. As John Muir said, "when we try to pick out anything by itself, we find it hitched to everything else in the universe."

Road: a public way which the Town Clerk certifies is maintained and used as a public way, or a way shown on a plan endorsed in accordance with the subdivision control law, or a way in existence when the subdivision control law became effective in the city or town in which the land lies, having, in the opinion of the planning board, sufficient width, suitable grades and adequate construction to provide for the needs of vehicular traffic in relation to the proposed use of the land abutting thereon or served thereby.

Vernal Pool Resource Areas: Any vernal pool, as defined under the Wetlands Protection Act and Regulations (MGL Ch. 131, §40 and 310 CMR 10), any site which potentially could be a vernal pool under that state definition, and any area within 100' from all vernal pools and potential vernal pools. Vernal Pool habitat is presumed to exist for any confined basin or depression not occurring in existing lawns, gardens, landscaped areas, or driveways which, at least in most years, holds water for a minimum of two continuous months during the spring and/or summer, contains at least 200 cubic feet of water at some time during most years, is free of adult predatory fish populations, and provides essential breeding or rearing habitat functions for amphibian, reptile, or other vernal pool community species, regardless of whether the site has been certified by the Massachusetts Division of Fisheries and Wildlife. The buffer zone shall be measured from the edge of the Vernal Pool Resource Area.

One of the gaps in the state law mirrored in many local bylaws is that vernal pools, one of the rarest habitats in the Commonwealth, are not sufficiently protected. The model here preserves both state-certified vernal pools and potential vernal pools.

Jurisdiction:

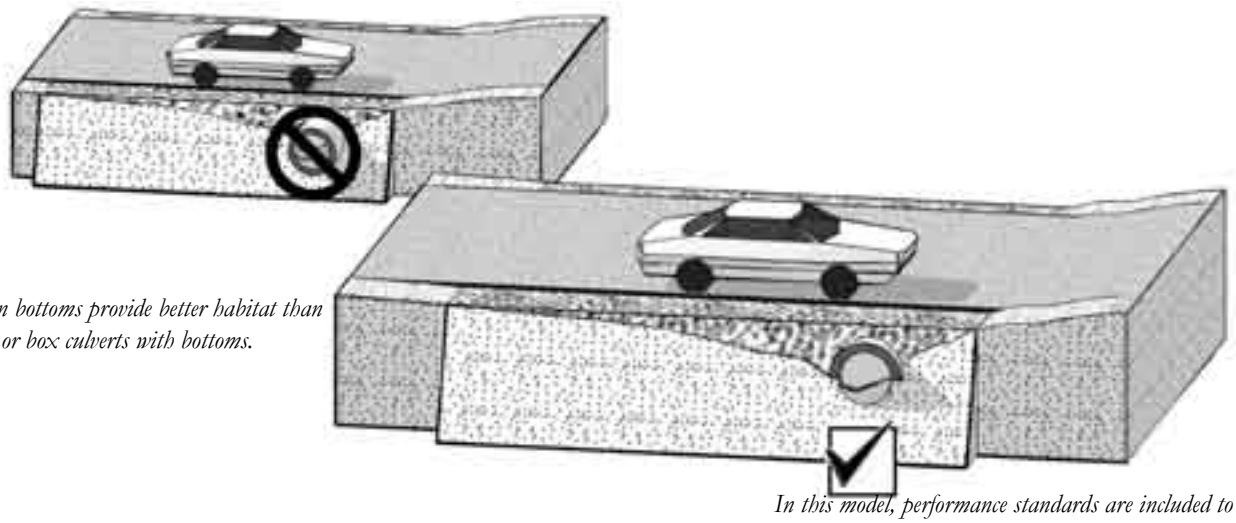
The jurisdiction under this bylaw shall be the same as the Massachusetts Wetlands Protection Act and Rivers Act and shall also include the following:

Vernal Pool Resource Areas

Additional references:

- Mass. Association of Conservation Commissions. *MACC Non-Zoning Wetlands Protection Bylaw/Ordinance.* 2006. MACC
- University of Massachusetts Continuing Education. 2004.

Figure: Traditional Round Culvert versus Culvert With Open Bottom



Culverts with open bottoms provide better habitat than traditional round or box culverts with bottoms.

In this model, performance standards are included to create a partial cookbook for forest conservation.

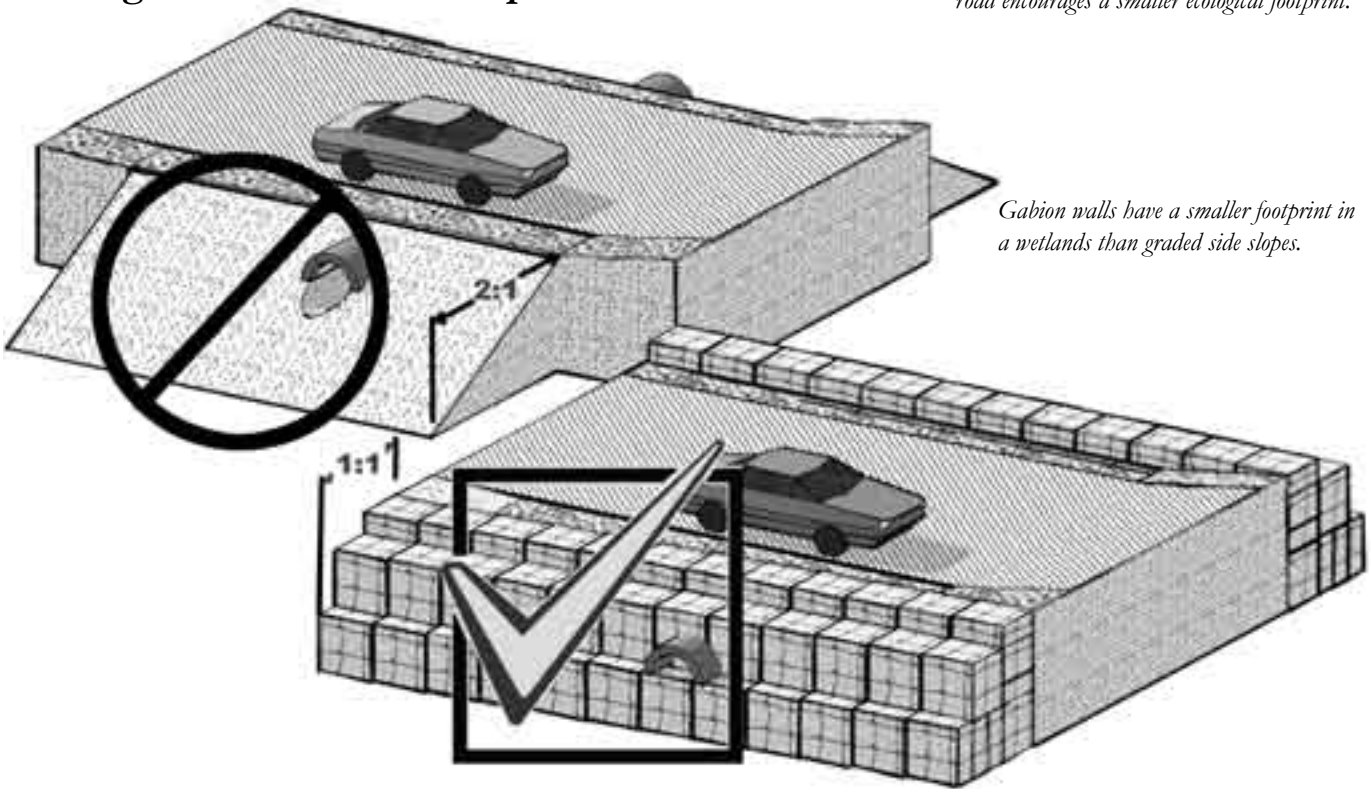
Performance Standards to Minimize Wetland Impacts

- **Any new driveway, common driveway, or road crossing** at and within 50' of a wetland shall be as narrow as possible to comply with town zoning and subdivision regulations.
- **All crossings of any intermittent stream within a biocore or supporting habitat, as defined by the Natural Heritage and Endangered Species program, or more than 400' from a road** existing on January 1, 2008 and any crossing of any perennial streams shall use a bridge or a culvert that is open at the bottom (open bottom arches and boxes).
- **Any new driveway, common driveway, or road more than 400' long** that crosses or is located within 10' of a wetland shall use gabion walls (designed in accordance with MassHighway standards) or concrete walls instead of graded side slopes.

Minimizing wetlands crossings is a core habitat preservation strategy. Encouraging short driveways and roads with a different standard is more effective at reducing the overall ecological footprint of a project than one blanket standard, that might force development deeper into a forested parcel.

Open bottom culverts help preserve natural habitat, and create an incentive against wetlands crossings. The length before this standard applies can be adjusted to fit the community vision. {This standard is repeated in the model subdivision regulations.}
Gabion walls (sized stones in steel baskets) reduce the footprint of a project in a wetland, but add substantial cost. Waiving this requirement for projects close to the road encourages a smaller ecological footprint.

• Figure: Graded Side Slopes versus Gabion Wall



Gabion walls have a smaller footprint in a wetlands than graded side slopes.

- **All practical means and alternatives** to avoid wetland filling or destruction must be used. Any wetlands which are filled or otherwise destroyed as part of any project must be replaced with artificial or restored wetland at a 2 for 1 ratio (200% replication), or 3 for 1 (300%) in a biocore or supporting habitat, as defined by the Massachusetts Natural Heritage Program. The replicated wetland must reproduce the values and functions of the original wetland as determined by the Conservation Commission. The top 12" of soil from the original wetland must be transplanted with soil structure – especially lamination and density profile – intact to the replication area. This is intended to preserve the flora and fauna wetlands communities and inhibit invasive species. Replications that do not properly perform the approved functions and values as specified in the order of conditions will not be deemed acceptable no matter how closely they adhere to approved engineered plans. The Commission may waive some all of the requirements of this paragraph for limited development projects sponsored or cosponsored by the town and for projects in the town center and projects within 200' of a developed area along a road.

Wetlands should NEVER be filled for anything which can be located outside of the wetlands. There will be times, however, when wetlands need to be altered to accommodate a road, driveway, utility, trail, or other linear feature that cannot be relocated. Wetlands replications (except for restoration of drained or filled wetlands) rarely match the diversity and function of lost wetlands. Requiring two-for-one (200%) replacement makes up for some of this loss and provides a disincentive for filling wetlands.

Providing a requirement for a greater replication in a biocore and supporting habitat places an ecological value on these unique resources, and discourages damaging development in those areas.

Figure: Wetlands Replication

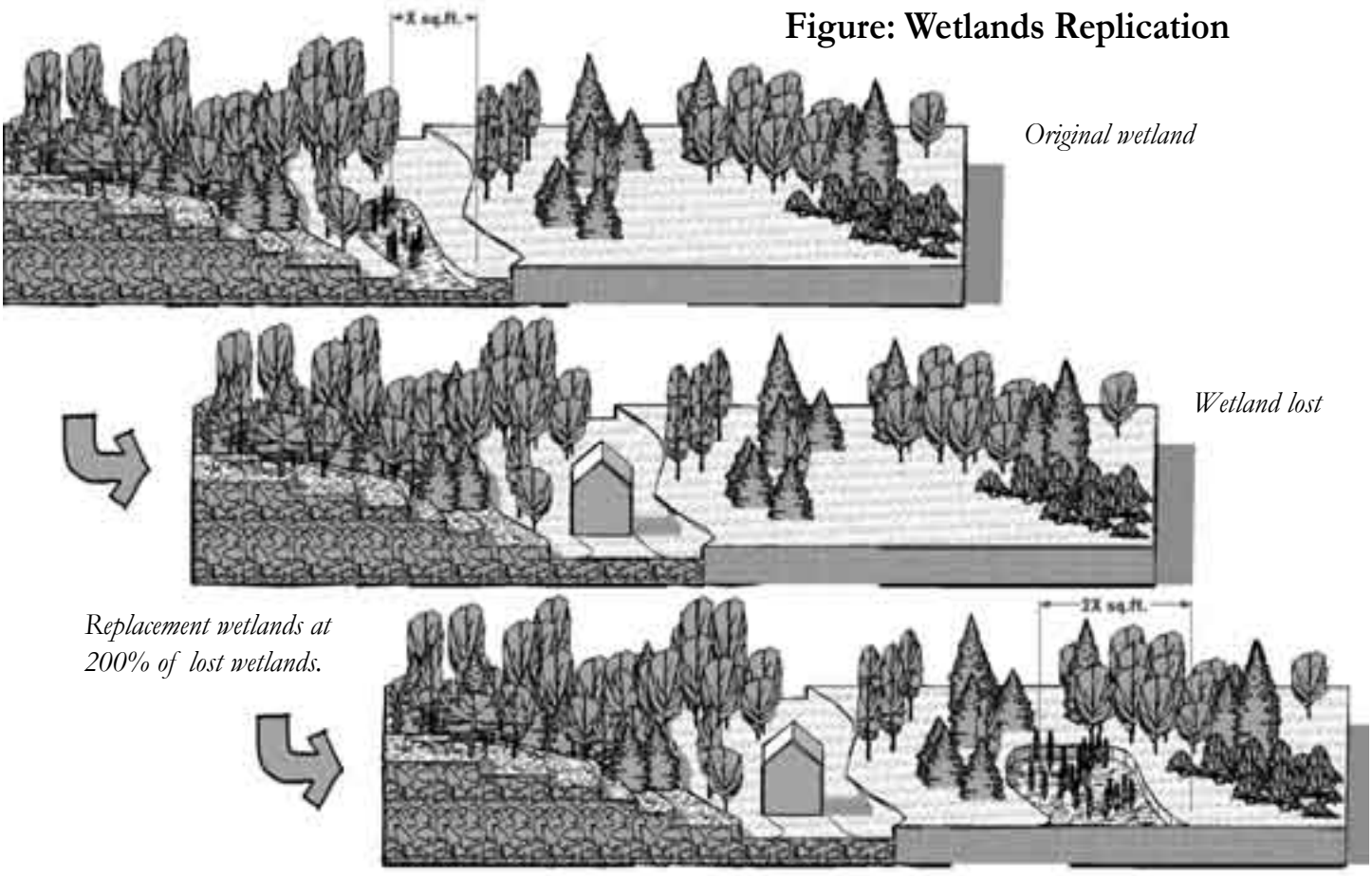
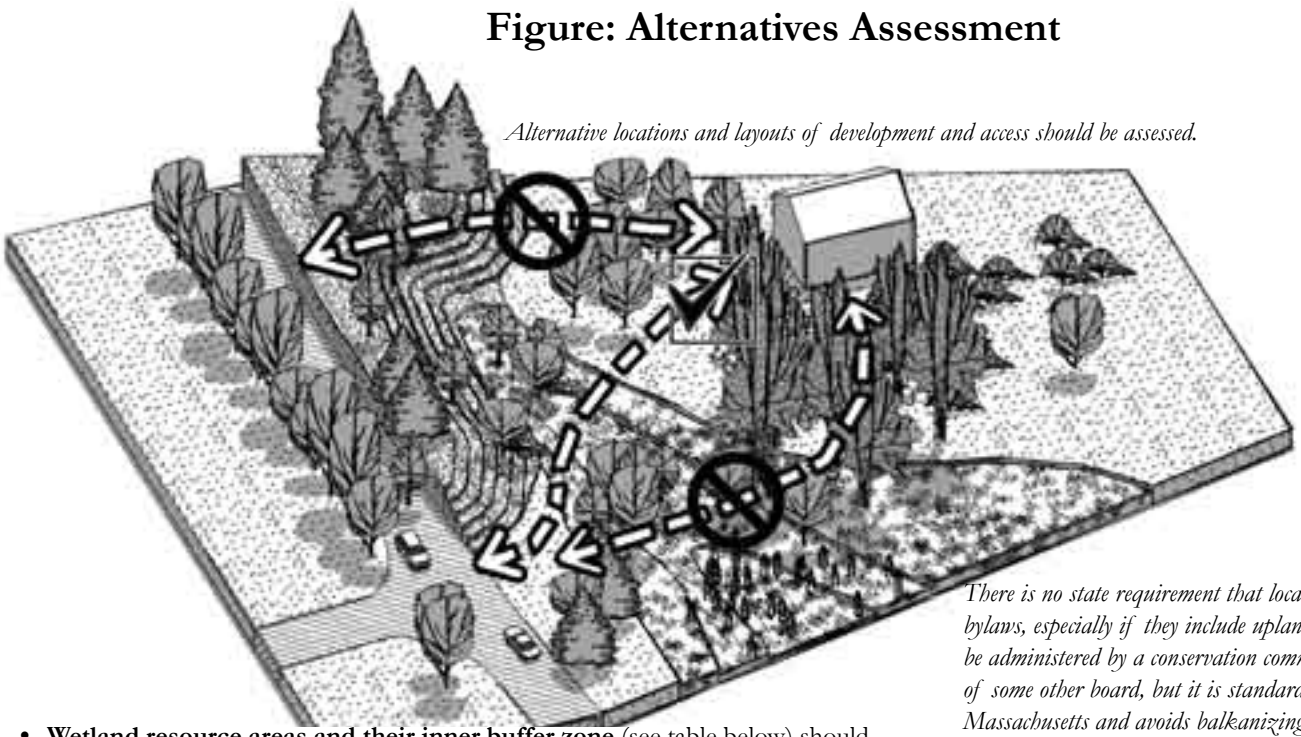


Figure: Alternatives Assessment

Alternative locations and layouts of development and access should be assessed.



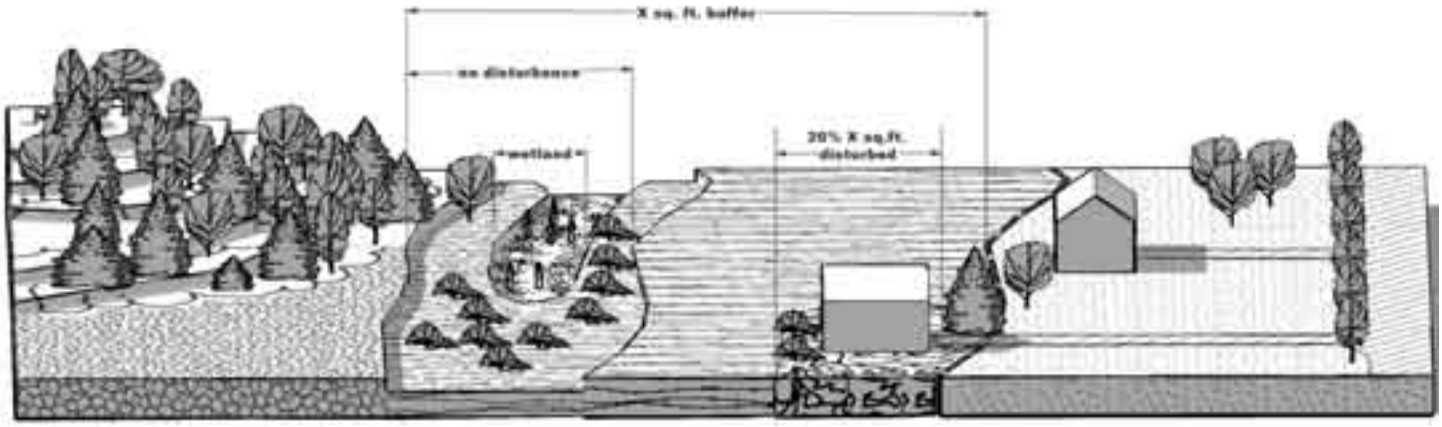
- **Wetland resource areas and their inner buffer zone** (see table below) should not be disturbed when possible. Disturbances will only be allowed for areas down-gradient of wetlands and projects in areas already degraded by existing impervious surfaces where the disturbance will have no impact on the property and for limited development projects, as defined in the Wetlands Protection Act Regulations.
- **An alternatives assessment** is required any time a wetland or stream crossing or partial crossing is proposed, considering all alternative ways to reach the site. If the wetlands crossing cannot be avoided, the assessment should consider how to reduce or mitigate wetlands impacts. The project with the smallest ecological footprint impact (wetlands and otherwise) shall be selected.
- **Outer buffer zones** (see table below) should only be disturbed when an alternatives assessment accepted by the Conservation Commission finds no reasonable alternatives and when no more than 20% of the outer buffer zone shall be disturbed. This is a total, cumulative allowance for all projects on a lot since the Town first adopted its wetlands bylaw. The proposed work must have no significant adverse impact on the resource area or any of the functions that resource area serves.
- **When any portion of a project, including work in upland areas, is more than 500 feet from a road that existed on January 1, 2008**, then there shall be no work in wetlands or wetland buffer zones IF it is possible to develop the site with at least one home on the road side of the wetlands AND IF no less than 50% of the homes that are possible with the wetlands crossing can be developed with no wetlands crossing, unless the project proponent can demonstrate that their development plan has a quantifiably smaller ecological footprint, including such mitigation as open space preservation, than not crossing the wetlands.

There is no state requirement that local wetlands bylaws, especially if they include upland areas, need to be administered by a conservation commission instead of some other board, but it is standard practice in Massachusetts and avoids balkanizing regulatory reviews.

Upland areas adjacent to wetland resources can be critically important to preserve wetland resources and habitat, absorb and clean stormwater runoff, prevent erosion and siltation, and protect groundwater recharge. Having a clear standard is much easier and more predictable for boards and the regulated community alike.

Alternatives assessment is used in National and Massachusetts Environmental Policy Act and in Massachusetts Rivers Act reviews Expanding the assessment to wetland crossings provides the opportunity to look at a project as a whole and evaluate the best way to minimize the overall ecological footprint.

The numbers used here can all be adjusted, but the basic premise is to create very strong pressure for development close to roads and preserve the back land, unless some other development pattern will have a smaller ecological footprint.



Inner and Outer Buffer Zone

Wetlands and Development Type	Inner Buffer	Outer Buffer
Vernal Pool Resource Area (pool plus 100'), except as noted below	75'*	75'*
All wetlands except as otherwise noted	75'*	75'*
Within 500' of a road that existed on 1/1/08	50'*	25'*
In village center or on municipal sewer	25'*	25'*

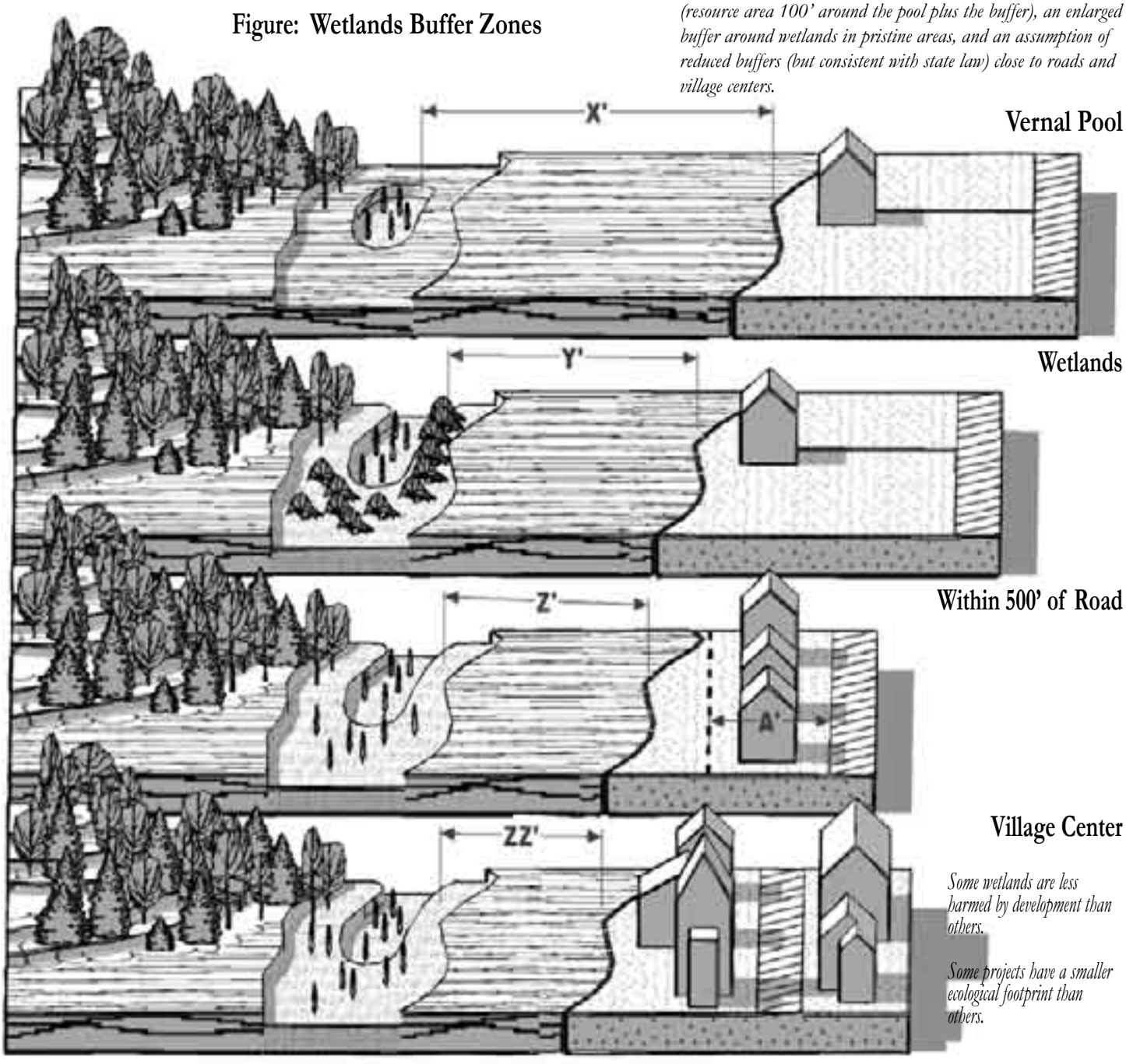
*The 100' buffer standards under the Massachusetts Wetlands Protection Act still apply and the Commission may, limit development within this buffer in accordance with state law and regulations.

All wetlands are valuable, but some are more valuable than others. A vernal pool with rare Jefferson Salamanders (Ambystoma jeffersonianum) that migrate to an adjacent upland area is far more vulnerable than an isolated wetlands dominated by Phragmites (an invasive plant of low wildlife value, Phragmites australis) located at the edge of a road. The regulations should not treat them all in the same manner.

Likewise, all development can threaten wetland and forest resources while providing economic benefits, but some can provide less threats and more benefits than others. A subdivision carved out of a previously pristine forest in the middle of a wildlife corridor has a much larger ecological footprint than the same number of homes at the edge of a village center.

The number can be adjusted as desired. As shown, this table would create significant vernal pool protection in pristine areas (resource area 100' around the pool plus the buffer), an enlarged buffer around wetlands in pristine areas, and an assumption of reduced buffers (but consistent with state law) close to roads and village centers.

Figure: Wetlands Buffer Zones



Some wetlands are less harmed by development than others.

Some projects have a smaller ecological footprint than others.

Model On-Site Wastewater Disposal and Treatment Regulations or Bylaw

The model provided here is NOT a complete septic system regulation or bylaw. It ONLY highlights forest conservation issues.

Because Massachusetts has a comprehensive state on-site sewage disposal (septic system) statute and regulations, community regulations are written to supplement, not replace, that regulatory scheme.

The **purpose** of these regulations is to regulate on-site sewage disposal and treatment to protect surface and groundwater, public health, safety, welfare, and the environment. They are enacted under authority which includes, but is not limited to: MGL Chapter 111, Sections 31 and 310 CMR 11.02. These regulations complement the state regulatory program for on-site wastewater disposal (State Environmental Code, Title 5 and Code of Mass. Regulations, 310 CMR 15.00) and add a stronger focus on sewage treatment, not simply disposal, and on minimizing the ecological footprint of new development. When there are differences between these regulations and Title 5, the stricter of the two shall apply.

On-site wastewater (septic system) standards can be adopted either by Town Meeting (under home rule authority) or by the Board of Health (under state statutory authority). Most, if not all, communities adopting standards do it through the Board of Health because it is a much easier route. The only reason to adopt such measures as a bylaw is if a town wanted to regulate forest conservation issues that go beyond basic health and environmental issues.

The Pelham Hills needs stronger regulations than Title 5. There is local consensus that the focus must be on sewage treatment, not simply disposing of sewage, and on reducing ecological footprints. In addition, the area has severe site constraints (poorly drained soils, shallow soil to fractured ledge and ground water, wetlands) and sensitive environmental receptors (surface and drinking water supplies).

The Massachusetts Association of Health Boards' model has good bones, but its technical standards are out of date. This section draws on that model and on work the author has done for the Vermont Association of Conservation Districts and the author's Planning for Decentralized and Onsite Wastewater Treatment, published by the American Planning Association Planners Advisory Service.

Performance Standards for On-Site Disposal and Treatment Systems

- Shared and cluster systems are encouraged. Each waste generator shall have their own septic tank prior to the shared or cluster system.
- The design of any on-site sewage disposal system where percolation rates are 2 minutes per inch or greater, where soils are described on the NRCS soil pyramid as sands and gravels, within 500 feet of a community well, or for any site where a pump is used to move sewage for any reason, shall utilize pressurized uniform distribution throughout the soil absorption system or leachfield.
- Pressurized uniform distribution shall use a minimum of 1 pound per square inch of pressure (1 PSI or 2.31' of distal pressure), with all effluent distributed throughout the system so that the distribution of effluent between the distribution pipe orifice and/or square feet of leachfield with the largest discharge and the orifice/leachfield section with the smallest discharge is less than 10%, in accordance with the Department of Environmental Protection and other standard design practices for such systems.

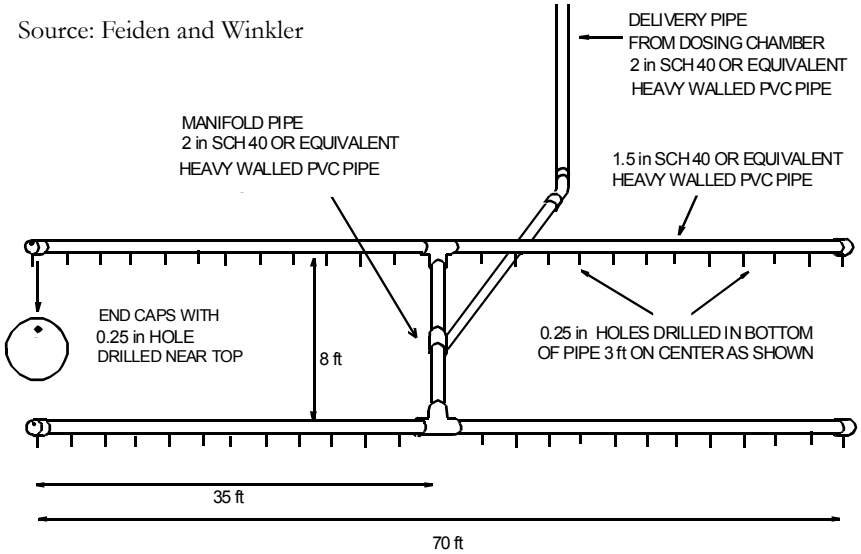
When effluent moves through soils very rapidly (fast percolation rate and very permeable soils), and when those soils are sands and gravels, there is only limited treatment of effluent. Title 5 partially addresses this by requiring an extra foot of vertical separation to groundwater, but research indicates that the extra foot does not provide very much extra treatment, while uniform distribution provides very effective treatment.

Uniform distribution provides improved treatment in all soils, so when a pump is being used anyway (e.g., the house is lower in elevation than the septic system), uniform treatment should be required.

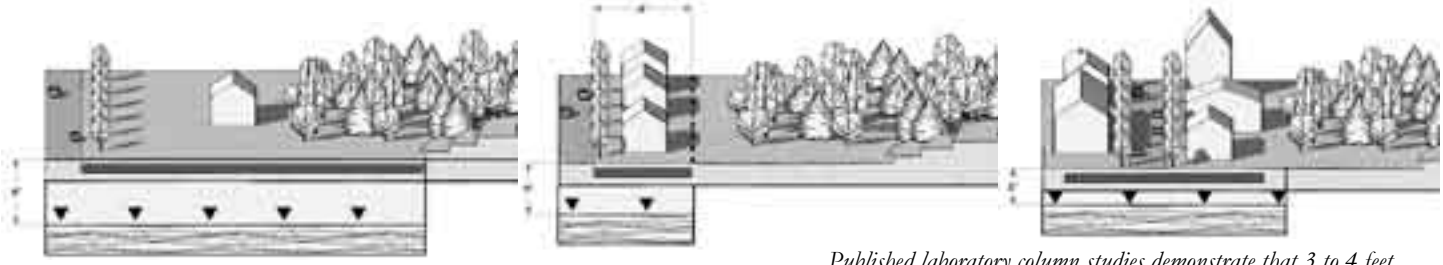
Uniform distribution improves the treatment of wastewater in all soils, but because of the added costs, it might only be required in sands and gravels, near very sensitive ecological receptors, and on sites where a pump is required anyway.

Uniform distribution is not simply pumping to a system. It is a simple to engineer system with pressure, small pipes, and small holes to ensure effluent is dosed 2 times a day with near perfect distribution of sewage throughout the system. This increases the treatment capacity and the life of the system.

Source: Feiden and Winkler



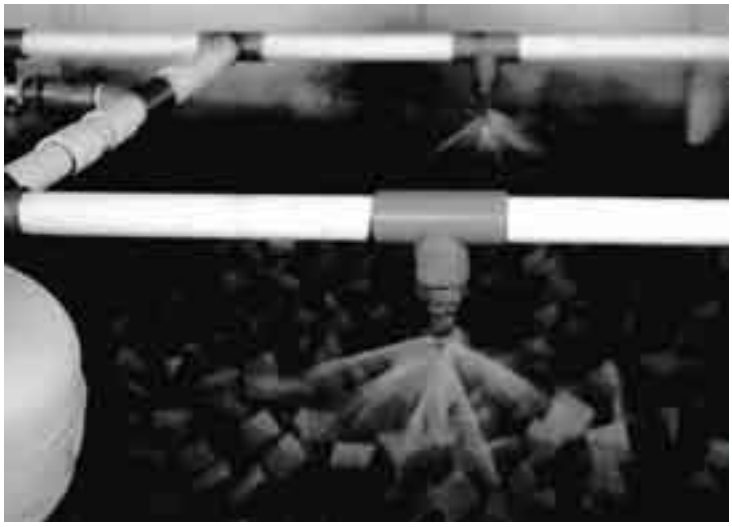
Rural: 400' From Existing Road **<400' From Existing Road** **Village Center**



- Fill above natural grade may be allowed for systems located within 400' of a road existing on 1/1/2008 but not systems located further back on a site.
- The vertical separation between the bottom of the stone in a leachfield and seasonal high groundwater or ledge, shall be, at a minimum, that shown in the table below.

Vertical Separation to Seasonal High Groundwater

Soils and Location	Separation
On-site sewage disposal systems, except as noted below	6'
For 2 minute/inch soils within 400' of road existing on 1/1/2008 with low pressure uniform distribution and when at least 50% of the site is being permanently protected as open space by the use of a conservation restriction or transfer to public or land trust ownership.	5'
Other soils within 400' of road existing on 1/1/2008 or in a zoned village center, when at least 50% of the site is being permanently protected as open space by the use of a conservation restriction or transfer to public or land trust ownership. This shall include systems utilizing fill above grade using pressurized distribution systems (but not gravity distribution) and other innovative and alternative systems approved by the Massachusetts Board of Health.	4'



Additional references:

- Domey, William. *Mass. Association of Health Boards Model Regulations*. 1996.
- Feiden, Wayne and Eric Winkler. *Planning Issues for On-site and Decentralized Wastewater Treatment*. American Planning Association Planners Advisory Service. 2006.
- Feiden, Wayne. *Course Pack-- On-Site Sewage Disposal and Treatment.* University of Massachusetts Continuing Education. 2004.

Published laboratory column studies demonstrate that 3 to 4 feet of unsaturated soil between a well functioning on-site wastewater disposal leachfield and groundwater is adequate for the treatment of pathogens. The Massachusetts standard of 4' to groundwater (5' for sands and gravels with excessive percolation rates) and other states' 3' separation is based on this body of literature.

Field determination of exact level of seasonal high groundwater is not, however, an exact science. Evidence suggests that many examiners, both private consultants and public regulators, have a high error rate in estimating seasonal groundwater levels or understanding soil mottles (the reduction/oxidation stains used to determine groundwater levels). In addition, there are relatively few in-situ studies on the fate of pathogens in actual field conditions.

As a result, many jurisdictions use a greater depth to groundwater than the literature might suggest. Pelham, for example, requires 6' of separation to groundwater for all soils. This extra depth provides some marginal benefits, especially in drinking water supply areas.

Sands, gravels, and any soil with excessive percolation rates have reduced soil contact with sewage effluent, and therefore reduced treatment. As a result, Massachusetts requires a greater depth to groundwater for sands and gravels (5').

While the extra foot of separation for sands and gravels in Massachusetts provides some marginal benefits, it is not nearly the benefits available from pressurized uniform distribution of effluent in native soils.

While the extra two feet for all soils in Pelham also provides marginal treatment benefits, those benefits are not as great as if development was kept close to the road and untouched forested or back land was preserved. For these reasons, the model regulation shows a 6' separation to groundwater for most sites, but allows reductions when development is along the roads or back land is preserved, thereby reducing a project's ecological footprint .
Preserving open space and large blocks of forest provides is a far greater benefit than an extra foot or two of separation.
The literature also demonstrates that no amount of depth will significantly reduce nitrogen beyond the reduction which occurs in the leachfield itself. Some types of systems, especially sand filters and some active systems and, to a lesser extent, dosed uniform distribution systems, provide some enhanced nitrogen reduction.
There are other ways to significantly improve the treatment of effluent. In particular, systems that use the upper biologically rich native soils can be more effective at treating effluent than systems that remove that layer. These types of systems, however, are severely limited under the state Title 5 regulations.

Model Subdivision Regulations

This model ONLY highlights forest conservation issues and is NOT a complete subdivision regulation model.

Rules and Regulations Governing the Subdivision of Land For the Town of _____ ("Subdivision Regulations")

Authority, Purpose, Applicability, and Legal Stuff

Adopted by the _____Planning Board on _____, amended _____, under authority granted by MGL Chapter 41, Section 81Q, consistent with the Massachusetts Subdivision Control Law, MGL Chapter 41, Sections 81K to 81GG ("Subdivision Control Law").

The purpose of these regulations is to preserve and protect the safety, convenience, welfare, environment and natural resources, especially intact forest blocks, farmland, and wildlife connectivity, in laying out and constructing ways and subdivisions.

No person shall subdivide any land, as defined by the Subdivision Control Law, improve or sell lots in a subdivision, or construct ways or utility or municipal services within a subdivision, except consistent with the Subdivision Control Law, these Subdivision Regulations, and a definitive subdivision plan approved and endorsed by the Planning Board and recorded at the Registry of Deeds. Whenever these Subdivision Regulations differ from those prescribed by local bylaws or regulations, the greater restriction or stricter standard shall govern. The invalidity of any section, paragraph, clause or provision of these Subdivision Regulations shall not invalidate any other section, paragraph, clause or provision therein.

The Building Commissioner shall issue no building permits for any of the lots of any subdivision unless notified in writing by the Planning Board that the approved subdivision plans and documents have been recorded at the Registry of Deeds. The Building Commissioner shall not issue an Occupancy Permit for any of the lots of the subdivisions unless notified in writing by the Planning Board that the subdivision meets the fire flow requirements and is in compliance with the subdivision regulations and the definitive plan approval.

Waivers

Regardless of what is shown on an approved definitive subdivision plan, all projects must comply in full with the Subdivision Regulations except as specifically provided for in any written waiver issued by the Planning Board. The Planning Board may, in special and appropriate cases, waive strict compliance with such portions of these Regulations, as provided for in M.G.L. Chapter 41, Section 81-R, where such action is in the public interest and not inconsistent with the purpose and intent of the Subdivision Control Law.

Waivers are only granted for a project which provide, in the sole opinion of the Planning Board, clear and significant improvements over a project not requiring a waiver, with such benefit to include, at a minimum, permanently protected open space and preservation of large blocks of forest, farmland, or land of significant ecological value.

The Planning Board generally supports waivers to allow large lot property owners to carve out up to three building lots every five years, provided that the necessary information to make informed decisions is available and the property owner permanently preserves (through a conservation restriction, agricultural preservation restrictions, or donation of land to the town or a land trust) at least three times as much back land as the building lots being created.

For communities that need new subdivision regulations, the illustrated Commentary on Updating Subdivision Regulations in Massachusetts provided by the Highland Community Initiative (HCI), and written by Wayne Feiden with illustrations by Dodson Associates, is a place to start. This is available from HCI or on their website at http://hci.thetrustees.org. Much of this section is drawn from that work and the author's Performance Guarantees, published by the American Planning Association Planners Advisory Service.

Subdivision regulations tell a story. The story is, perhaps, not the best bedtime reading, but it is a story about what your town could look like some day. Reread your subdivision regulations. Is this the story and future you want?

The model regulations here do NOT include copy language in the state statute. This avoids the need to make changes when state law changes. Consistent with state law, a subdivision is basically any division of land that requires a new road to meet local zoning.

The model here is not a complete subdivision model, but it is trying to tell a story with a few parts:

1. *Preserve our forest resources.*
2. *Understand those resources before making a decision.*
3. *Understand the alternatives before making a decision.*
4. *Tie forest conservation into any discretionary review.*
5. *Don't over or under engineer a project.*
6. *Slow traffic and mitigate impacts on streets.*
7. *Focus on stormwater, a huge environmental threat.*
8. *Reward good projects that preserve our forest resources.*

The legal stuff is straightforward. Get the message straight, short, and clear, but make the vision clear. At 10:00 at night after a long contentious meeting, it is the vision not the depth of gravel that keeps you going.

Under state law, the Planning Board may grant a waiver for any aspect of a project. Generally, subdivision standards must function like a cookbook—if an applicant follows the cookbook they get approved. When a waiver is requested, however, everything is on the table for negotiation, within the limits of good faith and without being arbitrary and capricious. It is much easier, and fairer, if you set a standard for how waivers may be granted.

Many, if not most, developers want to be absolutely sure that a project will be approved and will not request waivers. You should make sure that your community will be happy with the design of a project you will get without waivers and not require what you don't want just to get leverage when a developer requests waivers.

The rules should be clear that unless a written waiver is granted, the project must comply with town regulations. If the town accidentally endorses plans that show a gravity sewer line running up hill, the developer is not off the hook unless the town specifically granted a waiver allowing the gravity sewer to run uphill.

Submittal Requirements—General Requirements

1. A locus plan at 1" = 500' or greater on a 24" by 36" sheet of the proposed subdivision and surrounding properties within 1,000 feet of the subdivision on an ½ meter resolution orthophoto (typically the most recent MassGIS ortho) with current and proposed property lines and roads.

The locus plan is important to understand the context of a project.

2. Written permission from the property owner for the Planning Board and its agents to enter on the property during daylight hours to conduct site visits to review the application prior to and during the public hearing process.

No set of plans can ever make a site come as alive as a simple site visit. Site visits are exempt from open meeting law, but there should not be substantive conversations, simply collect information for discussion at the board meeting.

3. All plans at a scale of 1" = 100' or greater (preliminary plans) and 1"=40' or greater (definitive plans) on 24" by 36" sheets showing sufficient information about the subdivision to form a clear basis for discussion and decision making. Except for one and two-lot subdivisions, all plans must use Mass. State Plane NAD 1983 horizontal datum, in metric units, and NAVD 1988 vertical datum.

Plans must be clear enough to understand. The datum is critical to make a community's transition to a digital world much easier and allow for easy updating of Assessors' maps. The datum listed are the most common and easily used formats.

4. The subdivision name, boundaries, true north arrow, date of submission, scale, legend and title "Preliminary Plan" or "Definitive Plan" as appropriate. Existing and proposed lines of streets, street bounding, street vertical and horizontal curves and layouts, proposed names of new streets, rights-of-way, easements, and any public or common areas, all structures, and all wetlands, vernal pools, floodplains, and waterways in and within 500' of the subdivision.

At definitive stage, the town needs to understand all the aspects of the project-- it is too easy to miss things if the data is not there. Communities must balance what they want for preliminary plans. The more information, the better it is to make an informed decision, but the harder it is to have an informal discussion early in the process with a developer who is open to new ideas.

5. A plan and a report providing details of sewage disposal and treatment systems, including the results of all percolation and soil tests for individual lots and/or for any community or shared system, and any water supplies and wells within 500' of the property line. The report shall include all information required under the Department of Environmental Protection's Title 5 regulations and local health and septic regulations, if any. A registered Professional Engineer or sanitarian must stamp the plans and the results.
6. The definitive plan must include an erosion and sedimentation control plan designed to mitigate and prevent erosion/sedimentation of disturbed areas during and after construction activities. The plan shall show, in detail, what and when such measures will be implemented, on both a temporary and permanent basis, including land disturbances for house construction.
7. A detailed ecological assessment of wetland resources, wildlife habitat, and forest resources. A wetlands scientist, working with wildlife biologists and other qualified consultants as necessary, shall determine the extent and nature of all wetlands and vernal pools, an analysis of whether there are any certifiable vernal pools on the property, an assessment of rare and endangered plant and animal habitat following the format required for applications for the Massachusetts Endangered Species Act, an assessment of wildlife habitat and movement patterns and wildlife corridors based on sighting, scat, trails, and other signs, and an analysis of prime agricultural soils on the property. The board may accept an abbreviated analysis for one and two lot subdivisions.

No forest conservation can happen without understanding the site. This information gathering is important, since it is critical to allow real site planning to minimize the impacts of roads and infrastructure on natural resources.

The trade-off, however, is that requirements for extensive data collection will discourage small local property owners from carving off a couple of lots and may force them to sell their entire property to well-capitalized developers. Creating a waiver process for these small projects or automatically exempting them from some requirements can be critical.

8. The existing and proposed topography at five (5) foot (preliminary plans) and at two (2) foot (definitive plans) contour interval (lines of equal elevation). Major site features, such as existing stone walls, fences, buildings, large trees, rock ridges and ledge, historic features and wooded areas.
9. When a developer is not proposing an Open Space Residential Development/ Context Sensitive Development, the Preliminary Plan submission (or Definitive Plan submission if no preliminary plan is submitted) shall include at least three (3) realistic alternative concepts under those sections of the zoning. When a developer is showing a road more than 500 feet long or within 300 feet of any vernal pool or a road crossing any wetlands, or a road in a biocore or supporting habitat, as mapped by the Natural Heritage and Endangered Species Program, these alternative assessments must include analysis of options for reducing the potential impacts on wetland and habitat resources.

Alternatives assessments are the core of most large project environmental reviews, and as an exercise to help understand options that can both protect forests and allow a developer a project. The incentive approach is designed to get developers to use zoning approaches that already preserve forests, and in return get a clearer streamlined path to permit approval.

Submission Requirements Prior to Definitive Plan Endorsement

1. An electronic copy (CD-ROM) of all plans in accordance with the Level I submission standards, "MassGIS Standard for Digital Plan Submission to Municipalities," with the completed MassGIS checklist.
2. Corrected plans incorporating all plan approval conditions.

Design Standards

1. The designing professional engineer (PE) must sign and stamp the plans with a statement spelling out each of these design standards, certifying that each is met, and documenting where the standards are not met.
2. Projects shall be designed with no increase in peak stormwater runoff, as compared to pre-development conditions, during a Natural Resources Conservation Service (NRCS) defined one, ten, and 100 year storm. NRCS TR-20 and TR-55, or proprietary computer models built on these standards, shall form the basis for overall drainage analysis and certifications. The PE must also certify that all inputs, soil classification, length of sheet flow etc., are true and accurate and done in accordance with NRCS standards for TR-20 and TR-55.
3. All of the stormwater from a 1" NRCS design storm must be designed to drain into the ground and not leave the site. All water draining off streets must drain into properly sized and stabilized vegetated swales graded flat enough to avoid erosion and hold and treat water. Rain barrels, rain gardens, and underground cisterns can be used to catch roof, road, and other runoff, to mitigate stormwater to meet this standard, and provide water for lawns and gardens.
4. When a developer is not proposing an Open Space Residential Development/ Context Sensitive Development, then the drainage system must be also be designed so there will be no increase in total average annual stormwater runoff, as compared to pre-development conditions.
5. Roads within the project must be designed so that the 85th percentile speed within the project does not exceed 20 miles per hour unless the town approves a new collector street through the project.
6. Traffic generation and distribution must be designed to avoid any reduction in the Level of Service on road networks. Projects that will generate traffic that will cause damage to existing roads shall rebuild the streets so they can handle the traffic. The designing professional engineer must analyze roads within a mile of the project and their construction and determine what reconstruction is necessary to those roads to avoid increased wear and decreased road longevity and mitigate these increased costs to the town. Unless otherwise approved by the Planning Board, such mitigation shall NOT include road widening or paving of gravel roads, and shall generally focus on drainage improvements to allow those roads to withstand increased traffic.
7. Other than for one and two lot subdivisions and for Open Space Residential Development/Context Sensitive Development, dead-end streets are not allowed. Under no circumstances can a dead-end street be more than 500' from the nearest street which is itself not a dead-end.
8. All culverts for subdivision streets or rights-of-way over perennial streams shall utilize culverts that are open at the bottom (open bottom arches and boxes).
9. Wetlands and stream crossings and disturbance of prime agricultural soils and stone walls and stone rows shall be minimized to the extent technically feasible and designed to minimize disturbance.
10. Except when the Planning Board approves a subdivision street to serve as a collector street, street widths shall generally not exceed 20', minimum center line radius is 250', minimum vertical curve is 200', maximum grade is 8%, minimum grade is 0.75%, intersection angle shall be 90º, and minimum sight distance at an intersection shall be 300' (250' if raised speed humps are installed to slow cars approaching the intersections from all directions).
11. Native street trees shall be planted or maintained such that at the completion of the project there is a street tree an average of every 30' with a minimum 2.5" caliper size (diameter measured 6" above the ground). When an existing stone wall is saved, that wall can be maintained in lieu of planting street trees.

Level I is the least cumbersome level and does not assume any existing base information, but it allows the creation of an electronic format that will save the town thousands of dollars later. Towns can be more rigorous and ask for more (Level II or III), but only when they are ready to use the information and provide some base information to developers. Levels II and III are for towns with detailed based data already prepared.

Having a PE certify their plans is a partially privatized approach to plan review. This reduces town review time but makes the PEs legally responsible.

No increase in PEAK runoff prevents flooding but overall more stormwater still runs off over the surface of the land and does not recharge groundwater. Software computations are generally reliable, but ONLY with accurate inputs. An engineer can show less stormwater impact from a project by assuming that all soils are clay or that rainwater will "sheet flow" for 500', but neither assumption is true.

Holding water from a medium size storm is doable, especially in a rural area, and prevents flooding, encourages groundwater recharge, and improves stormwater quality. The design storm in this standard could be larger if the town wants to push the envelope.

No increase in total runoff is a VERY strict standard, but is doable and desirable in a rural area. It helps a project mimic natural conditions. This approach also creates an incentive for the desired development approach.

Speeds of 20 MPH make projects safer and more pedestrian friendly (5-10% of people die when hit by a car at 20 MPH, 85% die when hit at 40 MPH)

In rural areas, roads can take the traffic, but the wear and tear on roads can be substantial unless drainage improvements are made. It is reasonable to ask developers to pay for the road improvements needed to mitigate their project, without changing the character of the area. If a town doesn't mind wider roads or paved roads, these can be used to mitigate a project instead.

New dead-end roads allow development to extend into previously untouched blocks of forest. Allowing dead-end streets for a desired development pattern can be used as an incentive.

Open bottom culverts help preserve natural habitat, and create an incentive against wetlands crossings.
Narrow streets preserve the rural character, calm traffic, and reduce development and maintenance costs. 22' could be substituted for 20' in high traffic areas. Horizontal and vertical curves slow traffic speeds, as long as excessive curves do not make roads unsafe. Flat straight roads move traffic, but people take their cues from the road and drive faster, negating the safety benefits of extra visibility.

Administrative Standards

1. All items required by these regulations shall have a warranty period of at least one year from the date that the Planning Board finds, in writing, that the subdivision has been successfully completed. The required financial performance guarantee shall be maintained through this period with sufficient funding to provide any necessary repairs. The warranty principal shall be 15% of the estimated cost of the entire subdivision (ways and utilities) to cover engineering, workmanship and materials.

2. In accordance with the Subdivision Control Act, a financial performance guarantee (Surety Bonds, Money, Three Party Lender Agreement, or Letters of Credit) shall be posted with the Town in an amount, lending institution, and format approved by the Planning Board prior to endorsing the subdivision plans or the release of covenants not to sell lots, whichever is later. Said amount must be sufficient to cover the cost of all or any part of the improvements specified in these regulations at State "prevailing wage rates" and to cover the costs of inspections, record plans, street acceptance plans, and legal work, and a 20% contingency/inflation factor. If financial performance guarantees are used, at least two lots in a subdivision which can be built on must be covered by a covenant not to sell the lot to insure that all work, including legal work, is completed.

3. Letters of Credit, three-party agreement for lender retention of funds, surety bonds and other financial performance guarantees must be from an institution with a high credit worthiness, as determined by the Town Treasurer, and one for whom suits can be filed in Massachusetts. The performance guarantee must be drafted so that the only requirement that must be met for the Planning Board to draw on the letter is to notify the financial institution (grantor) that "We have incurred liability by reason of the failure of the applicant/developer/owner, within ninety days of the expiration of this letter, to complete the construction of their project (insert name of subdivision and plans) in accordance with the definitive subdivision plans and submittal, the subdivision approval, the Zoning, and the Subdivision Regulations. The amount drawn, which may be more than required to complete the project, will be held in a segregated bank account until the work can be bid competitively and the bid awarded and paid for or until the contract for the work is otherwise let and the work paid for. Any excess over the cost of completing the work will be returned to the grantor."

Massachusetts enabling legislation does not specifically authorize a warranty period, which makes some communities reluctant to impose one. Other communities feel that this is a reasonable requirement and as such is consistent with the intent of the Massachusetts subdivision control law.

Performance guarantees are legal devices used to ensure that neither the municipality or innocent purchasers will be hurt if a subdivision developer defaults or goes bankrupt. Communities always need to add a margin of safety to the principal of any financial performance guarantee to cover legal work, contingency, inflation and the extra costs involved when a municipality contracts for work.

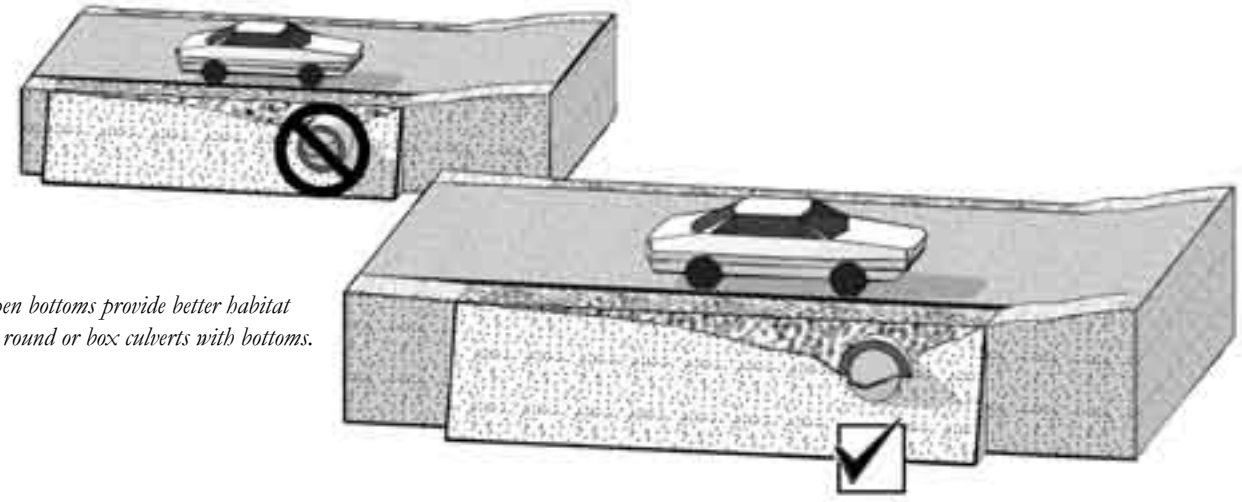
Municipalities want to minimize the costs, time, and complexity of collecting on financial performance guarantees. These standards are written to minimize the need to go to court to collect. The government's responsibility should consist only of presenting the proper documentation. It should not have to prove that the developer has not performed adequately!

This model focuses on forest conservation. Complete subdivision regulations include infrastructure design standards (roads, utilities, fire flow, water) and additional administrative standards.

Additional references:

- Feiden, Wayne. *Commentary on Updating Subdivision Regulations in Massachusetts.* Highland Community Initiative. 2006.
- Feiden, Wayne and Ray Burby. *Performance Guarantees.* American Planning Association Planners Advisory Service. 2002.
- Freilich, Robert and Michael Schultz. *Model Subdivision Regulations: Planning and Law.* American Planning Association Planners Press. 1995.
- Manning, Michele and Mark Wyckoff. "Practice on Gravel Roads." Zoning Practice. American Planning Association. February 2004.

Figure: Traditional Round Culvert versus Culvert With Open Bottom



Culverts with open bottoms provide better habitat than traditional round or box culverts with bottoms.

Model Right-to-Farm and Practice Forest Management

1. Purpose and mission-- Agriculture and forest management are essential valued activities which provide working landscapes, open spaces, jobs and economic diversity, fresh food and building materials, and clean air. This bylaw establishes a right-to-farm and practice forest management, provides a voice for the agricultural and forestry communities, and promotes agriculture and forestry by allowing these activities to function with minimal conflict.

This model bylaw simply makes a strong public statement that farming and forestry are critical activities. As such, the community is acknowledging that there will be nuisances created by those activities and those nuisances will be accepted for the greater good.

2. An Agriculture and Forestry Commission is hereby created consisting of the Planning Board and four people having a financial interest in agricultural and/or forestry to be appointed by the Selectboard. The non-Planning Board members shall have a term of four years, with two members appointed for an initial two year term.

This model builds on models posted by the Department of Agricultural Resources and the Attorney General Municipal Law Unit.

The bylaw does not waive any existing land use or environmental bylaw or regulation, but is a powerful statement about community values and expectations.

3. The Agriculture and Forestry Commission duties are to meet as needed to serve as facilitators, mediators, and advocates for the pursuit of agriculture and forestry, the preservation of prime and productive agricultural and forest lands, and sustainable agriculture and forestry practices. The Commission shall also attempt to resolve disputes about the operation of a farm or forestry operation through mediation and in a way which respects and honors generally accepted agricultural and forestry practices.

The right-to-farm and practice forest management can be adopted without a Agriculture and Forestry Commission, but the Commission can serve as a forum to ensure that agriculture and forestry issues are not lost.

4. Agricultural or forestry land includes all land eligible for enrollment, although not necessarily enrolled in, Massachusetts General Laws Chapter 61 and Chapter 61A, including all related farming and forestry practices.

5. The right-to-farm and practice forest management in accordance with generally accepted practice is hereby recognized to exist. These activities may occur at any time and on any day of the year and include the attendant incidental noise, odors, dust, and fumes associated with normally accepted agricultural and forestry practices. Whatever impact may be caused to others is more than offset by the benefits to the community and society.

The Commission could be an independent new commission, an extra duty of the Planning Board, or an extra duty of the Open Space Committee.

6. This protection does **not** extend to land which is being cleared in anticipation of conversion to non-agricultural or non-forestry uses, land farmed with genetically modified crops capable of producing seeds (and therefore spreading those crops where they may not be wanted), nor to off-label applications of pesticides and herbicides.

Some communities also require the seller of all parcels of land to notify buyers that this is a right-to-farm and practice silviculture community. The benefits of this are somewhat negligible and there are potential legal challenges and problems with enforceability. The best way to give notice is simply posting a sign on the major roads entering town stating that this is a right-to-farm and practice silviculture community.

7. These rights are hereby promulgated under home rule authority in accordance with Article 89 of the Articles of Amendment of the Massachusetts Constitution ("Home Rule Amendment") and are in addition to the right-to-farm and practice silviculture under Article 97 of the Amendments to the Constitution and all state statutes and regulations thereunder, including but not limited to MGL c. 111, § 125A and c. 128, § 1A.

Although not the reason for adopting such a bylaw, this bylaw will earn the community Commonwealth Capital credit under 1) adoption of a Right-to-Farm Bylaw and 2) creation of an Agricultural Commission.

8. This bylaw shall not be deemed as acquiring any interest in land, or as imposing or superseding any duly adopted land use or environmental regulation, bylaw, or statute.

Model Zoning Bylaw-- Zoning Districts

There shall be a village center zoning district, as shown on the attached map (orthophotos shown are for illustrative purposes only-- each town needs to identify what, if anywhere, are the appropriate places for such village center districts.

There shall be a traditional roadside development district, as shown on the attached map. {The district shall be those areas within X feet of certain roads and within Y feet of any municipal or future municipal sanitary sewer line.}

Dimensional and Density Standards in the districts shall be {far less stringent than elsewhere in town by right} or {far less stringent than elsewhere in town with development rights transferred in from Transfer of Development Rights Sending Zone}.

There are any number of ways to draw different district boundaries, including:

- *Village Center districts, with commercial and institutional uses, at major crossroads and historic village areas.*
- *Village residential districts, the densest housing the community is comfortable with within 1,500 feet (easy walking distance) of village centers and in appropriate areas where municipal sewerage exists or is likely to exist in the future.*
- *Traditional development districts, with less strict density requirements adjacent to existing paved roads than adjacent to gravel roads.*
- *Stricter standards in sensitive environmental areas. A simple GIS of prime agricultural soils, Water Supply Protection Areas, Natural Heritage and Endangered Species Program Biocore and Supporting Habitat and 1/2 mile buffer of existing permanently preserved open space, and known wildlife corridors and large tracts of land, could easily identify priority areas for stricter regulatory approaches. An appropriate wildlife scientist or ecologist could do a more detailed habitat assessment if resources were available to prioritize the most critical land for preservation efforts.*

The vision question that each community must ask themselves is whether they want to have a defined village center. If they do, then they must decide:

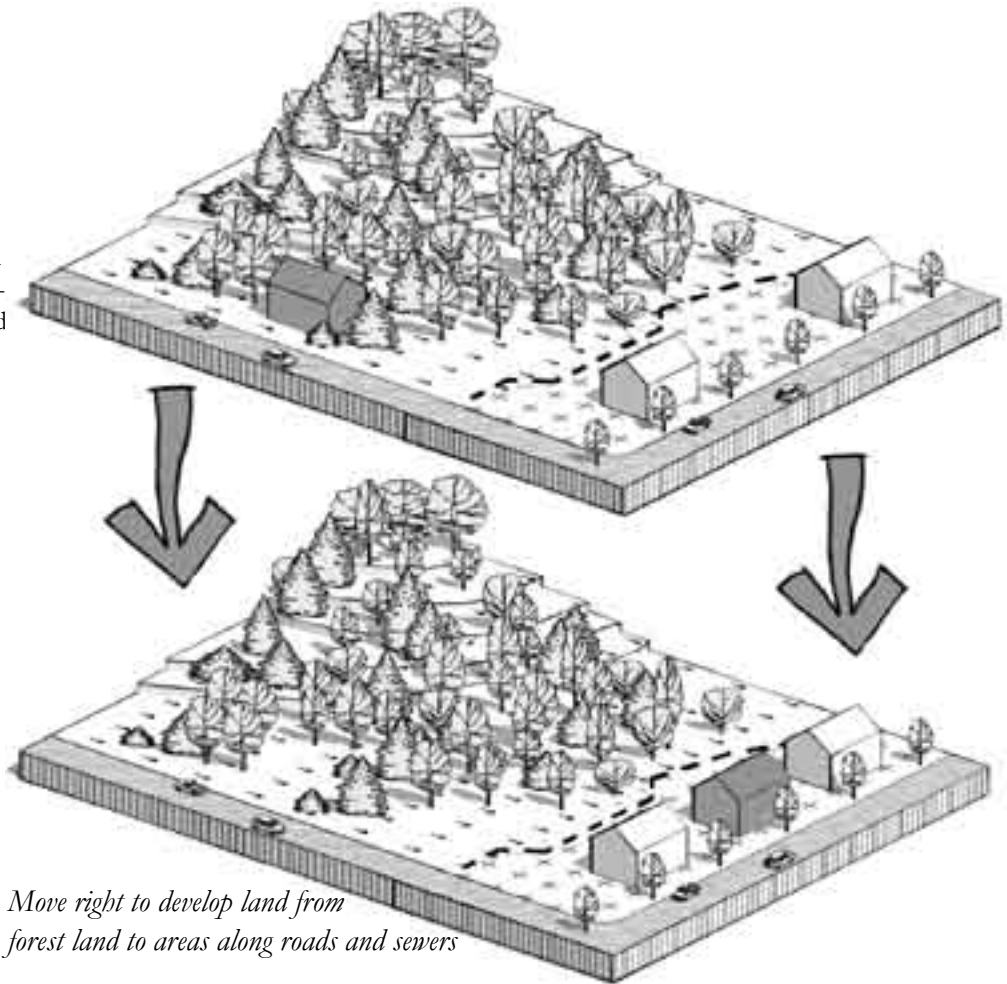
- *Should the density and uses necessary for a village by allowed by-right, which is usually the case if the primary goal is strengthening the village center; or*
- *Should the density and uses necessary for a village only be allowed with a transfer of development rights from TDR sending zoning, which is usually the case if the primary goal is forest conservation; or*
- *Should the density and uses necessary for a village only be allowed under some other set of circumstances (special permit, other public benefit, etc.).*
- *How can competing goals (village center and preservation of prime agricultural soils) both be accomplished or are any compromises between these two goals necessary?*

Model Zoning Bylaw- Transfer of Development Rights (TDR)

The Purpose of Transfer of Development Rights is to allow property owners to sell their right to develop property in intact forest ecosystems that should be preserved (DEVELOPMENT RIGHT) and to allow another property owner to purchase this right for development in areas which can best accommodate it--sites close to roads and sewer lines and sites in villages.

Sending Zone: Sending zones are areas more than 400 feet from any public road without sanitary sewers, and other sensitive areas that may be mapped and zoned by the town as a sending zone, that are important for permanent protection from development of land for farming and forest preservation. In this area, a property owners may sell the right to develop their property to protect the land for future generations.

A Sending Zone property owner may apply for a Planning Board Site Plan Approval to sell DEVELOPMENT RIGHTS as follows:



Move right to develop land from forest land to areas along roads and sewers

1. The property owner permanently preserves land in the Sending Zone with a permanent approved Conservation Restriction (CR), Agricultural Preservation Restriction (APR), or fee transfer to the Conservation Commission. Transfers to state and federal agencies and land trusts are encouraged when a CR or APR is placed on the property.
2. The CR or APR must be in a form approved by the Planning Board and Conservation Commission and the Massachusetts Division of Conservation Services or Department of Agricultural Resources, the property must have clear and marketable title, and all mortgages must be subordinated to the CR or APR.
3. An eligible agency accepting the CR or APR covenants that they will never accept a fee interest in the parcel without first transferring the CR or APR to another eligible agency. The CR or APR must ensure that the property is never developed and will be managed in a way consistent with forest and/or farmland conservation.
4. The property owner must demonstrate to the Planning Board's satisfaction that each DEVELOPMENT RIGHT granted represents a house that could be developed in complete conformity with zoning and all town bylaws and regulations and that market conditions are such that the house could have actually been developed within the next five years OR that each DEVELOPMENT RIGHT shall permanently preserve at least 20 acres of farm or forestland with at least 10 acres of land which is not wetlands, floodplain, or slopes over 20%.
5. Once granted, a DEVELOPMENT RIGHT may be used immediately (see Sending Zone requirements) or banked for future development. DEVELOPMENT RIGHTS do not expire IF the Site Plan Approval granting and documenting the rights is properly recorded at the appropriate Registry of Deeds or Land Court. To be valid, any transfer of the DEVELOPMENT RIGHTS to a new entity or a new parcel must include marginal reference to the Site Plan Approval granting those rights.

The concept of Transfer of Development Rights (TDR) is simple--move development from parcels where it shouldn't be to parcels where it can be and have market forces help preserve land.

Politically, it is usually easy to get support for Sending Zones. Everyone wants land preserved near them and all landowners appreciate having more options.

The challenge is getting support for Receiving Zones. Few people in rural areas want more development near them, and there is often no community consensus on where development should be.

The TDR bylaw concept is simple, but the details can make TDR complicated. This model makes some compromises to avoid complexity. More details can always be added if TRD takes off. In particular, the formula for how many development rights are allowed can be much more sophisticated and detailed.

TDR is NOT a panacea for forest conservation and will probably never be used to support more than a few open space parcels. It could be the simplest most cost effective way to save those few parcels, however.

Receiving Zone: Receiving zones are those areas within 400 feet of any public road and those areas that have municipal sewer where development could be accommodated with less impact on natural systems, but not including sensitive areas that may be mapped and zoned by the town in the future as not being appropriate receiving zones.

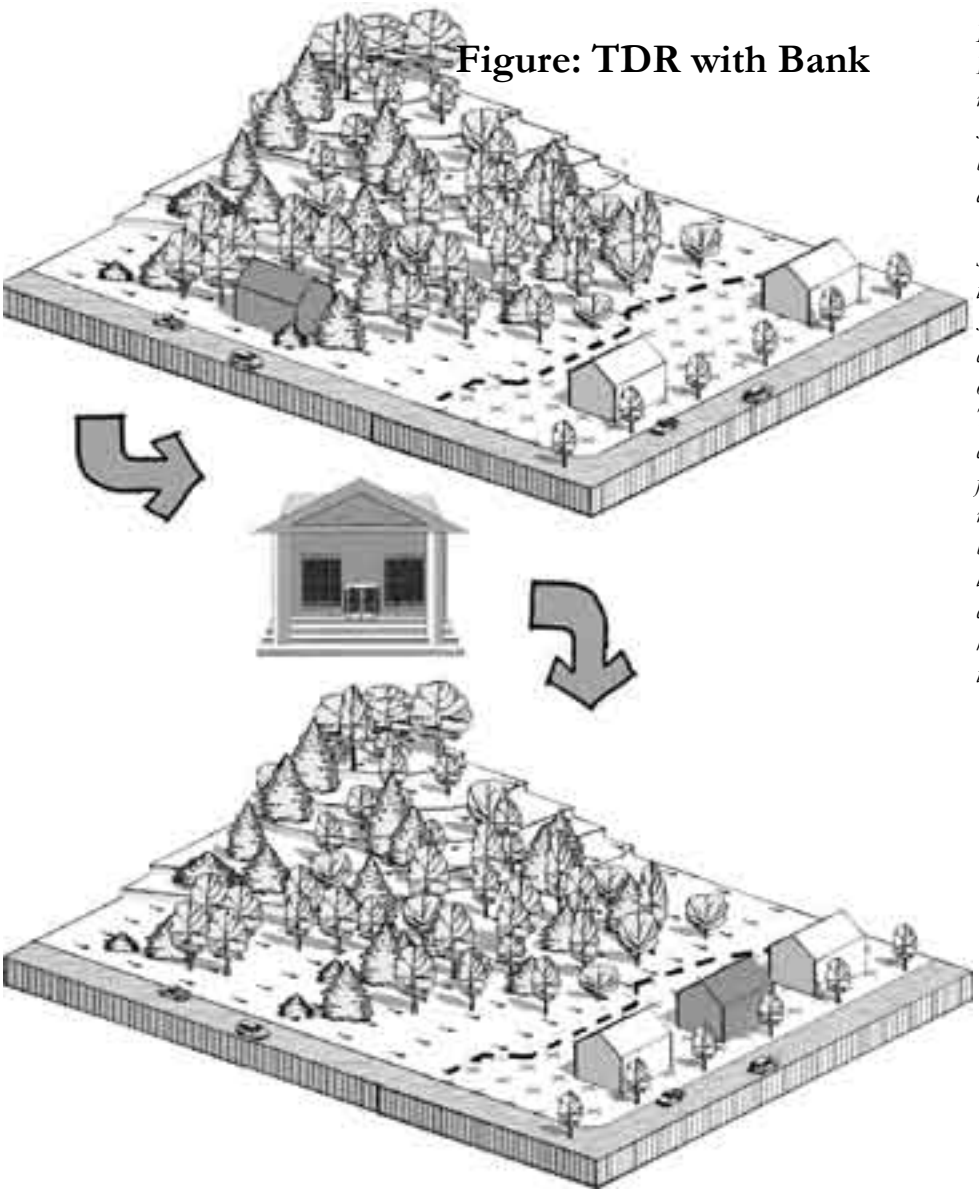
A Receiving Zone property owner may apply for a Planning Board Site Plan Approval to purchase DEVELOPMENT RIGHTS as follows:

1. The site receiving the development rights will be at least one acre in size, have 100' of frontage, conform to all front, side, and rear property line setbacks, and otherwise comply with zoning.
2. The land preservation required for the Sending Zone where the DEVELOPMENT RIGHT came from must be complete prior to the use of the DEVELOPMENT RIGHT.

The standards are designed to ensure that the land is protected forever and fit into a land preservation scheme that most land trusts are comfortable dealing with.

The actual transferred development could be on a smaller lot with less frontage than is usual, but with the same property setbacks so no neighbor would have a house closer to their property boundary than zoning allows.

Figure: TDR with Bank



It is unlikely that the seller of a DEVELOPMENT RIGHT wants to use that right in a different area of town or that when the seller is ready to sell there is even a buyer ready to buy. As a result, DEVELOPMENT RIGHTS do not expire.

Some communities leave it to the market to sort out these details. Some communities and land trusts step in and serve as a bank. A land trust or conservation commission, for example, could purchase open space, much as they do even without TDR. They could bank the development rights and IF they can find a buyer, sell the rights and use those proceeds for the next purchase. If a market in development rights appears, private parties will compete as a bank, and then they will take care of preserving land. If no market develops (which is more often the case), the land trust or conservation commission will hold some development rights of dubious value until there is a need for them.

Additional references:

- Horsley & Witten, Inc. and Robinson & Cole. *Transfer of Development Rights Bylaw/ Ordinance for Towns in Barnstable County*, 1997 as revised. Cape Cod Commission.

Model Zoning Bylaw- Performance Standards

Except as noted in the Special Permit section that follows, the following performance standards apply to all projects:

- No common driveways may be more than ___ feet long and no driveway feeding single home may be more than ___ feet long.
- Structures, other than barns, farm structures, septic systems, solar and wind power systems, and wells, shall not be placed in open fields. Residential buildings should be located adjacent to and within 100' of tree lines and wooded field edges or hidden within the forest.
- All stone walls, stone rows, and hedgerows shall be preserved, other than a single cut for a driveway.
- There shall be an average of one non-invasive native street tree a minimum of 2.5" caliper (diameter, measured 6" above the ground) for every thirty feet of frontage between any structure on a site and the road. These trees may be trees preserved (recommended option) or newly planted trees. When an existing stone wall is saved, that wall can be maintained in lieu of planting street trees.
- All outdoor lighting, other than motion detectors, shall have full cut-off fixtures which prevent any light dispersion or direct glare above a 90 degree or horizontal plane from the base of the fixture. Except for light controlled by motion detectors, outdoor lighting may not be measurable at the property boundary (0 foot candles or 0 lumens per square foot using a basic light meter) or exceed 0.8 foot candles at any point. Light standards may not exceed 14 feet in height.
- No persistently loud or disruptive noise shall be allowed between the hours of 10:00 PM and 7:00 AM. All steady, non-fluctuating noise levels must not exceed 50 dBA (Decibels) between 10:00 PM and 7:00 AM and 60 dBA (residential) or 65 dBA (commercial/industrial) between 7:00 AM and 10:00 PM at the property boundary (using a sound meter which meets the American National Standards Institute's Specification for Type II Sound Level Meters: S1.4-1971.) Steady, fluctuating noises are subject to the same maximum noise levels as measured on an energy weighted or LEQ basis (LEQ is a measure of sound pressure to allow comparison of fluctuating noise with steady noise) over a representative one (1) hour time period. The standards shall not apply to temporary construction, agricultural, and forestry operations.
- Parking for more than one car shall be located at least 50' back from the road and behind or adjacent to buildings (the first car may be parked closer to the street without limits)..
- Structures on hills at least 100 feet tall and with at least 20% slopes shall be placed so that the high-point of any structure is not taller than the top of the hill and so that roofs are below an imaginary plane from the road frontage for the property to the top of the hill.

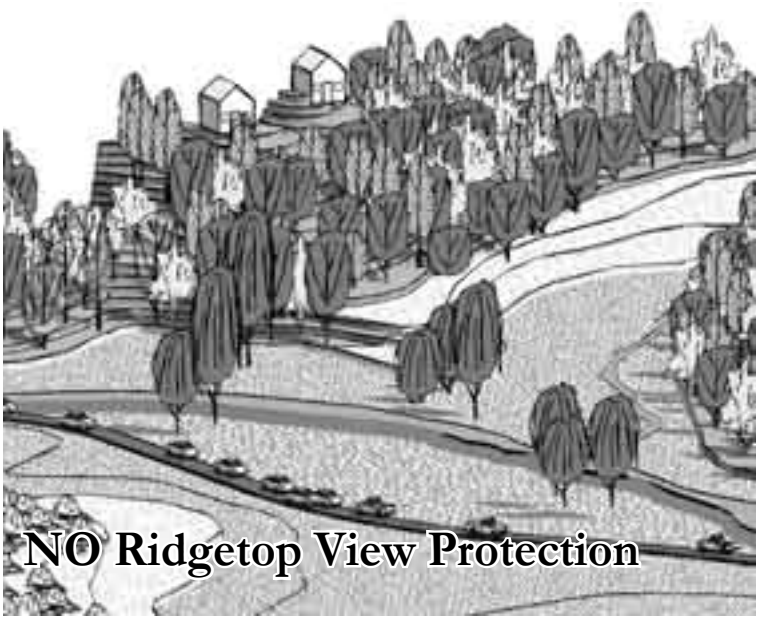
Performance standards are the basic rules that every new project must meet, whether the project is by-right or requires a Special Permit or Site Plan Approval. Existing uses are grandfathered under state law.

Driveway lengths are designed to encourage homes to be placed closer to the street.

Preservation of fields, stone walls, and trees and minimization of excessive lighting and noise are designed to preserve the rural character.

Technical standards (especially lighting and noise) are designed to be understandable to the lay reader, but allow for the potential of quantitative measures in case enforcement is ever needed.

Ridgetop or hillside standards are designed to allow property owners freedom for how they situate their homes, provided they are not harming what could be unique views or changing the character of an area. The issue is not how high up a hill a property is developed, but whether a home will be silhouetted and change the rural character.



Performance Standard Waivers

The Planning Board may, by Special Permit, allow development not meeting one or more of the above standards if the Board finds that:

1. The property otherwise cannot be developed or otherwise could be developed only with a new road and the relief requested is the least relief necessary to allow development of the property; or
2. Granting relief is more effective at preserving rural character and forest conservation than not granting relief.

Requiring a Special Permit for projects which do not meet these standards provides the Planning Board jurisdiction to prevent having performance standards become too stringent, but create a strong incentive for property owners to comply with the standards.

Additional performance standards can be added as needed to address local conditions.

There are many other models of performance zoning from around Massachusetts and the nation. Some are very specific to address specific issues:

- *Asheville Planning Department. Hillside and Ridgetop Regulations: A Recommendation for Asheville. June 15, 2005*
- *Cape Cod Commission. Model Land Clearing, Grading and Protection of Specimen Tree Bylaw*
- *Heyer, Fred. Preserving Rural Character. American Planning Association Planning Advisory Service. 1990.*

The Cape Cod Commission model, cited above, is especially applicable to forest conservation performance standards. That model is not repeated here, because it is available online from the Cape Cod Commission, www.capecodcommission.org/bylaws/clearing.html.

Model Zoning- Table of Use

Use (see also following pages for details)	**Allowed only as noted**
Cookie Cutter Development	Planning Board Special Permit
Cookie Cutter Development in public water supply reservoirs or aquifers	Not Allowed
Context Sensitive Development	Planning Board Site Plan Approval
Outdoor recreation/tourism facilities consistent with forest conservation	Planning Board Special Permit
Agricultural uses	By-right
Forestry uses	By-right

Requiring a Special Permit makes the permitting path much less certain for developers and increases appeals that can be very expensive to defend.

Special Permits should only be required when:

1. *The town is happy to discourage the project (e.g., Cookie Cutter Development); and*
2. *For projects that could be great or terrible, depending on the details (e.g., outdoor recreation), and the zoning does not provide sufficient performance standards defining what the town is looking for to allow the project by site plan approval.*

Model Zoning Bylaw- Cookie Cutter Development

Cookie Cutter Development is any division of land, other than a Context Sensitive Development, with or without subdivision approval, into two or more new lots within any five year period in conformance with the Table of Dimensional and Density Regulations. (A lot is a parcel of land in fee-simple ownership designated on a plan or deed filed in the Registry of Deeds or Land Court.) Cookie Cutter Development shall not be allowed in any public drinking water supply watershed or aquifer.

Cookie Cutter Development shall be allowed only by Special Permit from the Planning Board if and only if the Board finds that the development will be no more detrimental to forest conservation and ecological protection than a context sensitive development on the same site and when the applicant demonstrates quantitatively that the project will have a smaller ecological footprint, that is the total impacts on the natural environment, than a Context Sensitive Development. Context Sensitive Development is the preferred development pattern generally will have a smaller ecological footprint than Cookie Cutter Development.

The application for a Cookie Cutter Development shall include the conservation analysis required for Context Sensitive Development and an alternatives analysis showing the site developed as a Context Sensitive Development.

The forest conservation message can encourage if not require, context sensitive development. Traditional development (also known as cookie cutter development) should be more difficult than development planned around forest conservation. Requiring a special permit is the easiest way to do this.

Massachusetts courts have ruled that a community may not require ALL uses obtain Special Permits and must allow some uses by-right. (Because boards MUST generally grant Site Plan Approval unless a project is lacking in information, albeit with conditions, Site Plan Approval is considered to be by-right.) As such the Cookie Cutter model is only valid if a town has context sensitive development or some other development pattern by-right.

Using this model, Cookie Cutter Development could be limited throughout a town, or only in the most sensitive areas in the community.

Communities can go further by only allowing cookie cutter development when context sensitive development is not practical for a site.

Model Zoning Bylaw- Context Sensitive Development

Purpose: Context Sensitive Development is a development where the land which is most valuable for ecological protection, wildlife habitat and habitat connectivity, forest conservation, agriculture, ridge-lines and vistas, historical significance, and active recreation is permanently protected and residential development is concentrated on the remaining land. The property owner is given a clear development path, streamlined permitting, and almost complete flexibility in how the remaining portion of the property is developed. Context Sensitive Development is the preferred residential development pattern outside of village center areas.

In a Context Sensitive Development that conforms to this section of the bylaw:
- There is no minimum project size or minimum number of units required;
- There is no minimum lot size or frontage requirement;
- The project is allowed to be developed on only a portion of the entire property;

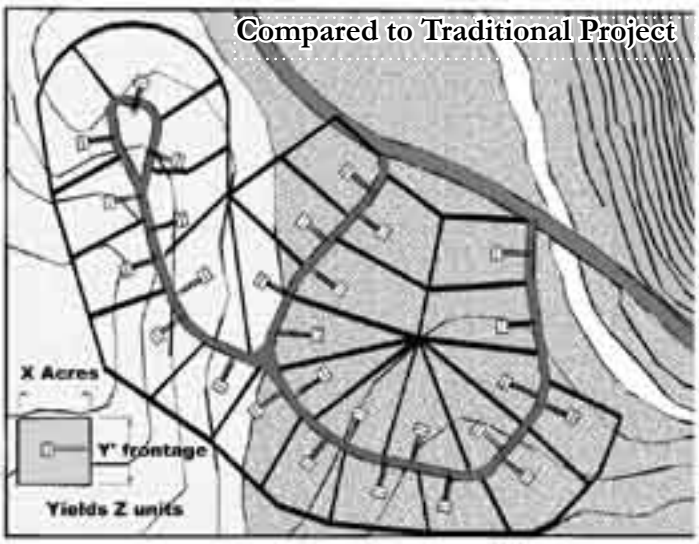
Permits Required: A Context Sensitive Development requires a Site Plan Approval from the Planning Board, and Subdivision Approval if the project includes a subdivision, but development is otherwise allowed by-right. {IF the Site Plan Approval section of the zoning is not sufficient, amend it to include filing requirements and approval criteria.}

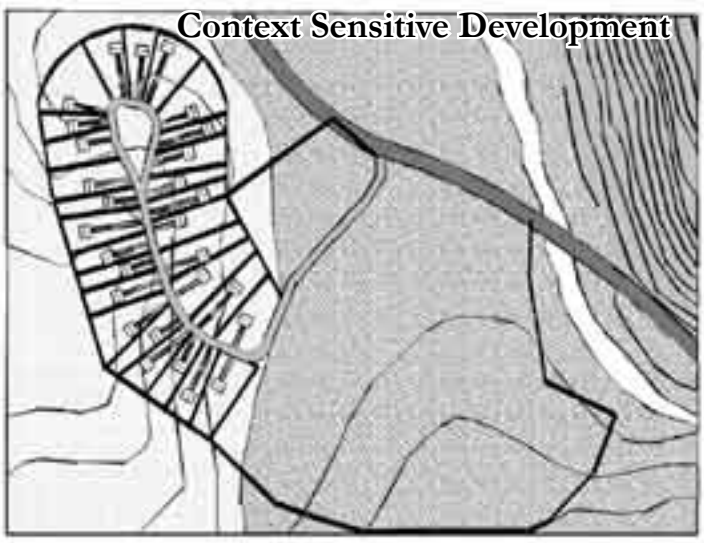
Lot Yield: The maximum number of dwelling units in a Context Sensitive Development shall be calculated as follows: {see next two pages for options.}

This bylaw draws from and copies from all of the references cited below, work the author has done in Northampton and Huntington, work Jeff Lacy and the Shutesbury Planning Board have done in Shutesbury, and the work Joel Russell has done in Northampton.

The Shutesbury Planning Board created a proposed bylaw that effectively preserves forests, but it includes elements that Wendell and Pelham have not embraced:
1. *One single bylaw not well designed for slow incremental adoption.*
2. *Not as strong a focus on other town bylaws and regulations.*
3. *A formula that large property owners have found objectionable.*
4. *Multiple zoning districts are required for the approach to work.*

These issues can be addressed, however, and Shutesbury is working with landowners to help them understand the bylaw. This bylaw should be examined and considered for any community considering forest conservation bylaws.





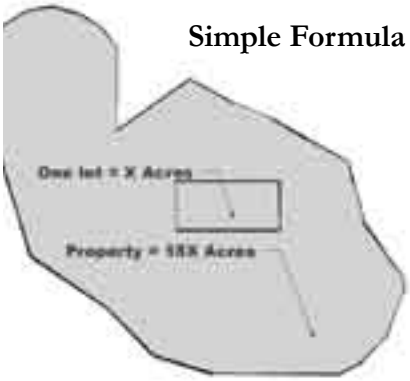
Option One: Comparison to Traditional Project (Traditional Lot Yield Approach) The maximum number of dwelling units shall equal the number of units that would be permitted if the project was laid out using the Table of Dimensional and Density Regulations and complied with all applicable zoning, subdivision, wetlands, and on-site sewage disposal regulations.

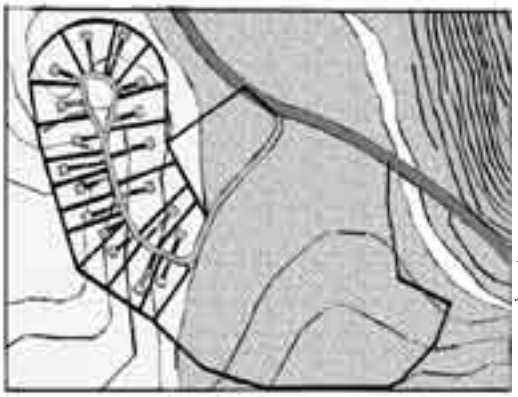
The Planning Board shall determine the maximum number of units after reviewing a plan prepared by the applicant demonstrating this calculation, and only after and if the Planning Board finds that such an analysis appears to be in conformance with all applicable bylaws and regulations. **OR**

In practice, this "traditional lot yield" approach is extremely complex because a developer must design the entire project that the town does NOT want before beginning on the desired project. This wastes a great deal of time and may convince a developer that they might as well just do a traditional project. This is NOT a recommended approach.

Option Two: Simple Area Formula
The maximum number of dwelling units shall be ____ dwelling units per acre, based on the entire tract of land being developed. **OR**

It is very easy to calculate the number of units allowed based on the size of a lot. Given that much land is not developable, the number of units allowed would be significantly less than that shown in the table of use regulations. In practice, however, this method makes no attempt to calculate how developable a parcel is, and a 100 acre parcel with 60% wetlands gets the same development rights as a parcel with 20% wetlands. In addition, by ignoring whether land has any frontage, this approach could potentially increase development pressures, depending on the standards in other areas of the bylaw.

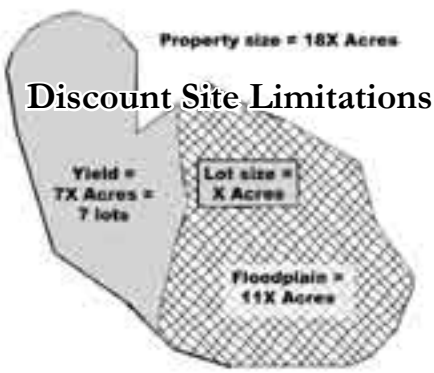


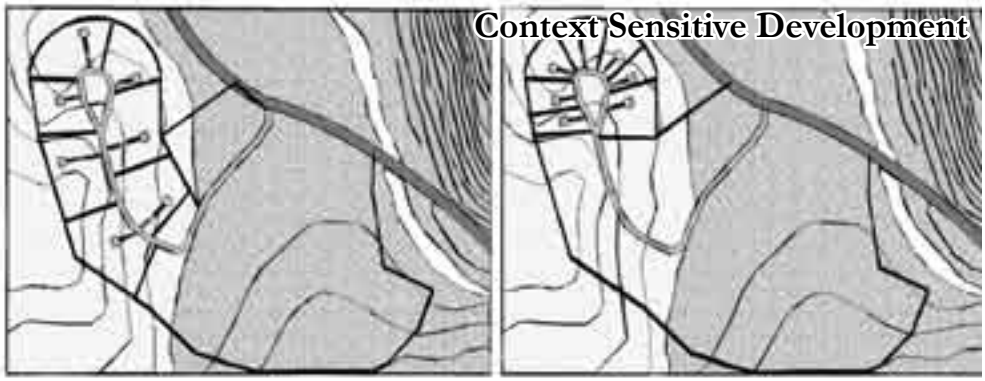


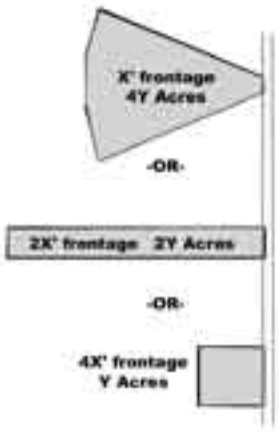
Option Three: Formula Discounting Site Limits
The maximum number of dwelling units shall be ____ dwelling units per acre, not including all water bodies and 80% of wetlands, 100-year FEMA floodplains, and slopes over 25%. For this analysis, MassGIS data may be used for wetlands and floodplains.
OR

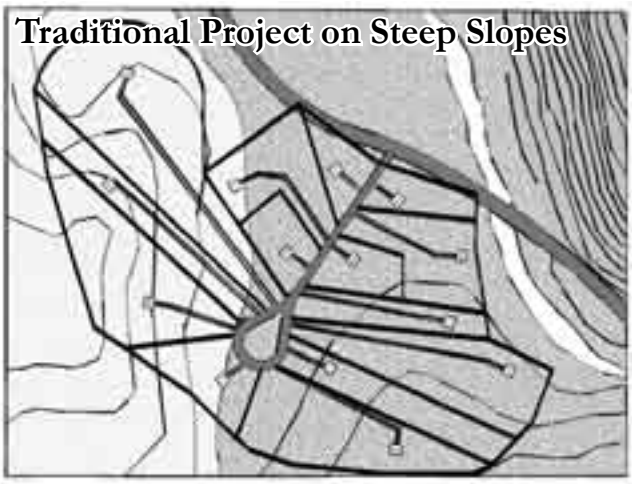
Any formula can be easily modified to discount floodplains, wetlands, steep slopes or other site limitations. The formula can be adjusted to meet local conditions.

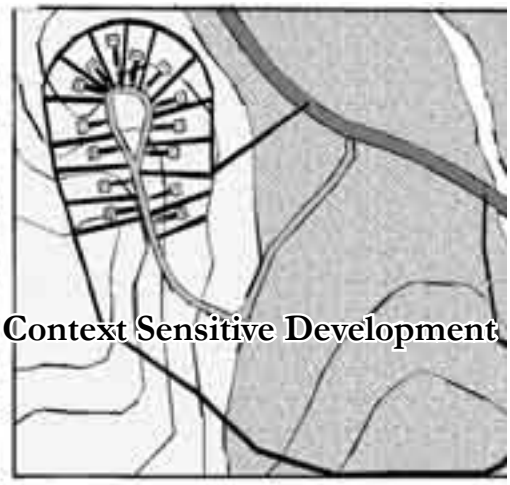
Some allowance can be made for not having perfect information about those site constraints.











Option Four: Based on Formula of Lot Size and Frontage
The maximum number of dwelling units shall be the lesser of ____ dwelling units per acre and ____ dwelling units per 100 feet of frontage, not including all water bodies and 80% of wetlands, 100-year FEMA floodplains, and slopes over 25%. For this analysis, MassGIS data may be used for wetlands and floodplains.

Frontage Calculation: The entire property (protected and developed land) shall have at least 100' of total frontage for new dwelling unit, not counting affordable units created under the Bonus Density section of this bylaw below.

Bonus Density: The above densities are increased by twenty (20) percent for each of the following:

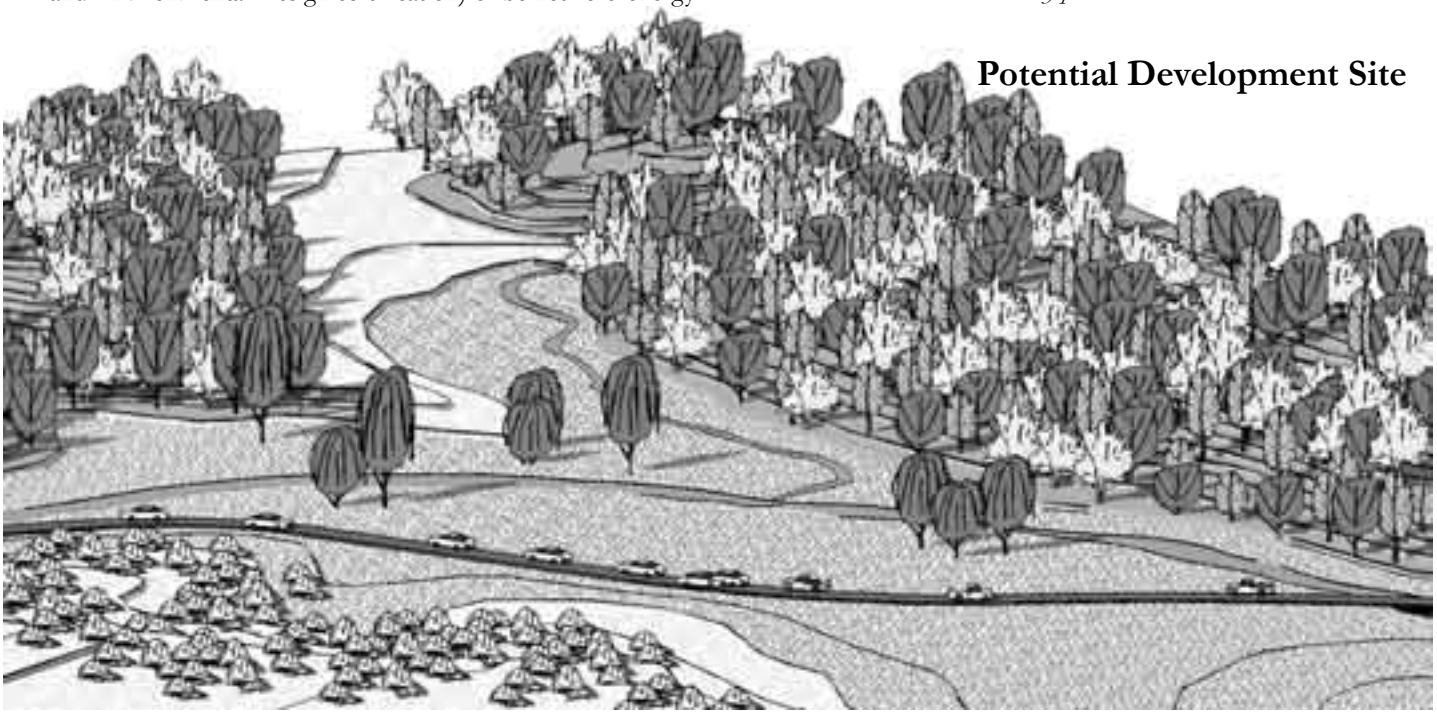
1. Ten (10) percent of dwelling units are affordable for rent or purchase by households making eighty (80) percent of Area Median Household Income, as calculated by the U.S. Dept. of Housing and Urban Development with adjustments for family size, when the Planning Board finds that deed covenants will ensure that units will remain affordable for a minimum of 30 years and that the applicant has structured the project, provided all paperwork and fees under the MGL ch. 40B Local Initiative Program to allow the Town to count these units as affordable units. **AND/OR**
2. Significant public access to and linking through the property and the Planning Board finds that such public access provides a significant recreational benefit (such as access to an important natural area); **AND/OR**
3. Preservation of at least 60% of the parcel as a permanently protected working farmland (including the creation and preservation of new working farmland). **AND/OR**
4. All buildings be LEEDs certified (the Green Building Council's Leadership in Energy and Environmental Design certification) or be net zero-energy.

Formulas can all be adjusted to meet community development priorities. For example, in a community that is very concerned about floodplain development but fine with steep slope development, floodplains could be "discounted" by 90% but steep slope only be 30%.

In traditional rural development, frontage is often the most limiting site constraint to development, creating a logic in using it to limit context sensitive development as well. Care must be taken, however, to avoid creating an incentive for more roads and subdivisions.

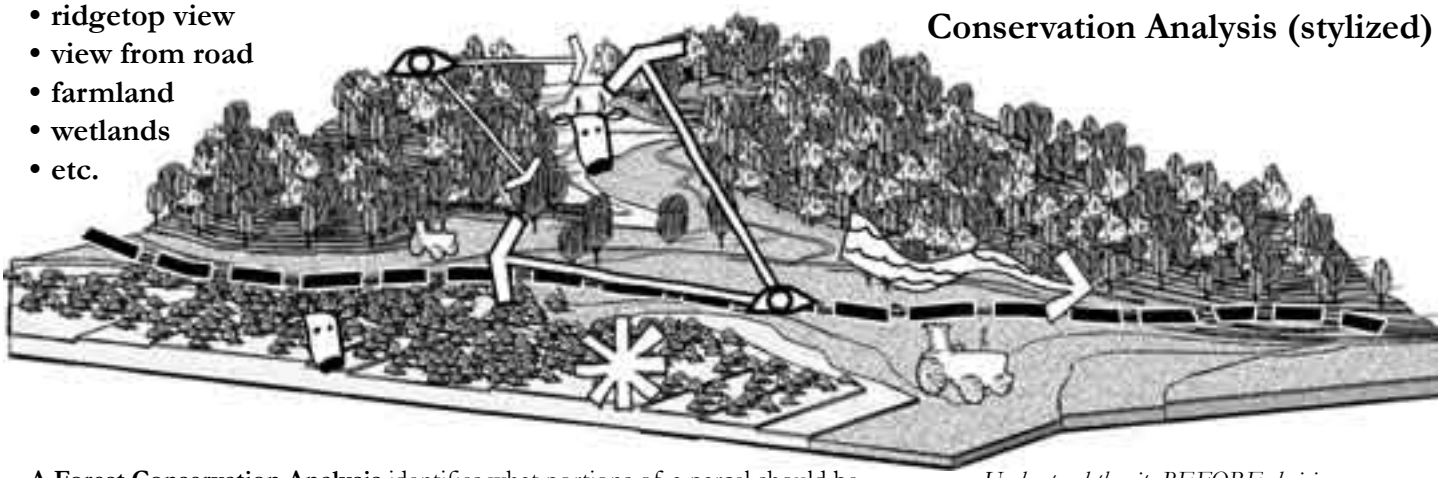
Longer affordability periods is possible for rental units. For homeownership, however, this creates "owners" who are not building any more equity than renters, reducing the benefits of homeonwership.

In the example, X might be the current zoning's allowable density. (E.g., if minimum lot size is 2 acres, X would be 0.5 dwelling units per acre) Bonus densities can be used to encourage affordable housing or any other public good, depending on community priorities.



- **ridgetop view**
- **view from road**
- **farmland**
- **wetlands**
- **etc.**

Conservation Analysis (stylized)



A Forest Conservation Analysis identifies what portions of a parcel should be preserved, what portions are most suitable for development, and which conservation and/or recreation features should be optimized in designing a project. A project developed in accordance with the Conservation Analysis is eligible for Site Plan Approval IF the project preserves the most valuable portions of the property.

PRIOR to submitting a Site Plan Application, an applicant shall file a Conservation Analysis with the Planning Board, with copies to the Conservation Commission, showing land of conservation interest and areas most appropriate for development. The application shall include a plan at the scale of 1"=100' or greater showing the following on and within 300' of the parcel. For projects of three units or more, this plan shall be prepared and stamped by a surveyor or professional engineer.

A. FEMA 100-year floodplains, topographic contour lines with 5' intervals, steep slopes (show slopes 15% to 24.9% and slopes 25% plus), water bodies, public and community water supply watersheds and aquifers, and all wetlands, as defined in the Massachusetts and Town wetland regulations/bylaws.

B. Agricultural land, forest land, prime agricultural soils, ridgetops, hillsides, trails, scenic viewsheds, adjacent protected open space and large tracts of undisturbed forest land, historic features, Natural Heritage and Endangered Species biocore and supporting landscape layers.

C. Potential for foot, bicycle, horse, snowmobile and wildlife connections to nearby existing and proposed preserved open space.

D. Viewshed analysis of ridgetops on the site and of buffers necessary to screen development on the site from the road.

E. Analysis of wildlife habitat and wildlife corridors prepared by a qualified expert.

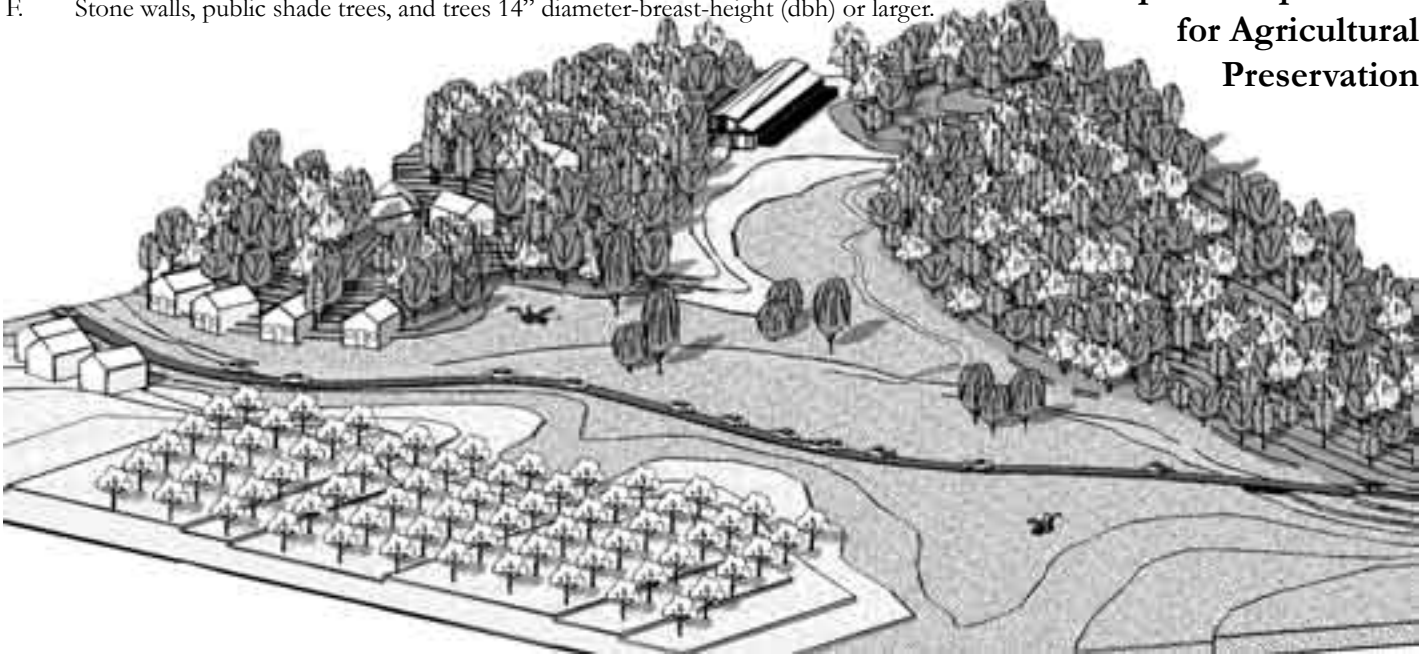
F. Stone walls, public shade trees, and trees 14" diameter-breast-height (dbh) or larger.

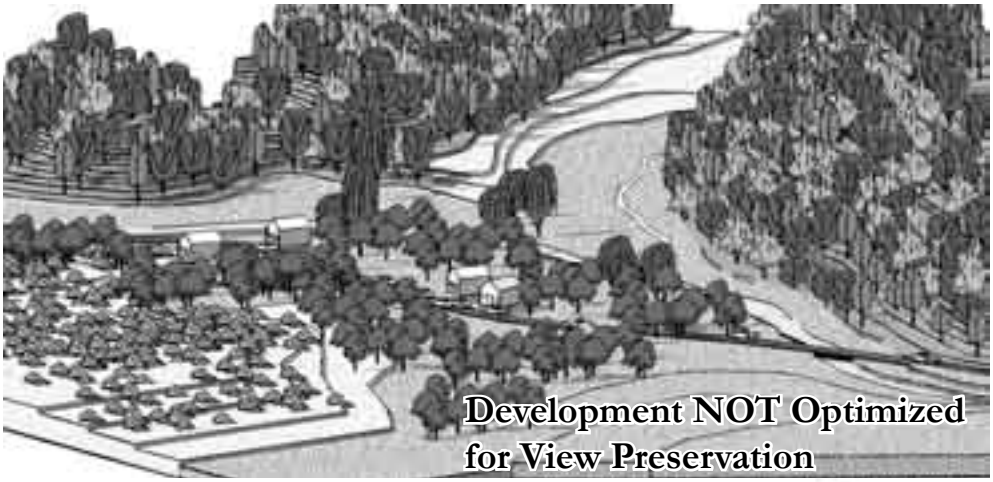
Understand the site BEFORE decisions are made concerning how and what to develop. The Conservation Analysis is provided PRIOR to the Site Plan review to ensure that the appropriate open space is preserved on a site.

There is no "right" open space to preserve as each site is optimized for the most valuable features on a site. Optimizing for agricultural use (see sketch), for example, could make the views of the homes less appealing than optimizing for scenic vistas from the road.

Planning Board waivers are critical to avoid creating undue burden for a property owner. Information necessary for a 10 unit subdivision is probably not necessary for a very small project (e.g., a two unit project, or whatever threshold the town wants to set).

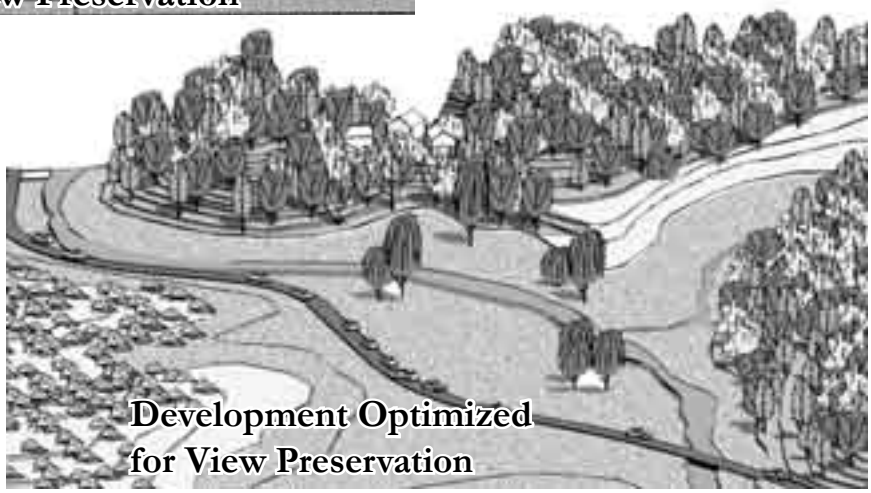
Development Optimized for Agricultural Preservation





The Planning Board may waive all or portions of the Conservation Analysis when:

1. The Planning Board determines that the waived portion of the Conservation Analysis is not relevant to decisions about a particular site and would impose an undue hardship on the applicant.
2. When the applicant is providing at least 20% more permanently protected open space than otherwise required and the Planning Board determines a full Conservation Analysis is not necessary.



The Planning Board shall:

1. Consult with the Conservation Commission, the Open Space Committee, any town comprehensive plan, and the Open Space and Recreation Plan.
2. Notify the applicant if the information provided is incomplete or appears to be in error.
3. Provide a written Finding within 60 days identifying which site areas are most important to preserve and which conservation values should be optimized in project design. Unless unique site attributes are present, the priority shall be protection of ecologically sensitive areas, contiguous unfragmented forest land, wildlife habitat and habitat connectivity, farmland, water supply areas, vistas, historic features, preservation of rural character, and trail links.

The Site Plan shall incorporate the Planning Board's Finding and the following:

1. Land shall be permanently preserved consistent with the Finding.
2. The project layout shall be consistent with the conservation values in the Finding.
3. Roads and driveways shall be consistent with the Findings and designed based upon the conservation analysis to maximize preservation of important natural and historic features on the property and follow contours and minimize cuts and fills.
4. Access shall be from internal roads and common drives and not from existing public roads to the extent practical.

The Planning Board works with developers to set land preservation priorities and determine features (e.g., agriculture, scenic vistas) to optimize.

In return, developers have a clear and certain permitting path when they file for Site Plan Approval.

Permanently Protected Open Space: A minimum of 65% of the land shall be permanently protected open space and/or, if it serves a public purpose, recreation areas. In calculating total land area, if wetlands (including water bodies and floodplains) and slopes steeper than 25% are more than 65% of the protected open space, the wetlands and steep slopes over 65% shall be subtracted from the total land area for purposes of calculating the required open space, but shall still be permanently protected. Land within 50 feet of any driveway, road, or residential building, may not be counted toward the protected open space requirement.

The preserved open space shall be based on the Conservation Analysis. The limits on getting "credit" for wetlands and steep slopes are to ensure that at least some of the open space was buildable land. The percentage of required open space and the maximum wetlands and steep slopes can be adjusted.

The Planning Board's Conservation Analysis Findings must be used to identify what open space to preserve. The open space must be laid out to optimize the features the Planning Board identified as being important for preservation and to minimize any intrusions into habitat areas. For example, agricultural fields and forest tracts should not be bisected or cut into by any development.

If desired (not shown in the model) a town can provide additional incentives for public access, affordable housing, or any other benefit by reducing required open space OR increasing allowable wetlands and steep slopes when those benefits are provided.

Open space shall be permanently protected by transferring it to the Conservation Commission with town approval or by granting a permanent MGL Ch. 184, Sec. 31 Conservation Restriction (CR) or Agriculture Preservation Restriction With the Right to Farm if Fee Owner Fails to Farm (APR) to the town, the Commonwealth of Massachusetts, or a qualified non-profit conservation organization. The Site Plan application must show all permanently protected open space with full metes and bounds descriptions on a recordable survey and the proposed open space deed, CR or APR. After Site Plan approval and prior to any development on the site, the survey must be recorded at the Registry of Deeds or Land Court, all property pins delineating the boundaries of the open space must be placed, and the deed, CR or APR preserving the open space shall be accepted by and transferred to the town Conservation Commission or a CR or APR shall be accepted by and transferred to the town, the Commonwealth of Massachusetts, or a qualified non-profit conservation organization. The restriction must be permanent, with subordination by all mortgage holders and a covenant that the restriction holder will not accept fee title to the property without first transferring the restriction to another qualified organization.

Open space preservation must be permanent, but public access is not generally required (although it can be incentivized).

Context Sensitive Development creates strict rules for where development occurs on the property and how development is laid out. The rules are based on preserving the values and resources that the community and the Planning Board have identified of being of the highest value. In return for preservation of exactly what the town wants to preserve, the developer is given a great deal of flexibility in developing the developable portion of the land..

Dimensional and Use Requirements: Within the development portion of the property (the area not permanently protected as open space), frontage, minimum lot areas and setbacks shall be established by the applicant and shown on the approved plan. Setbacks to land that is not part of the development, however, shall not be less than those that apply for a single-family home that is not in a Context Sensitive Development. Minimum lot area shall conform to any Board of Health requirements for sewage disposal and water supply protection. Homes on individual lots or a master deeds, single and two family homes and common buildings and recreation facilities for the benefit of residents, including storage buildings, office use, childcare, dining, recreation, and entertaining and guest lodging are allowed.

Common buildings can make a project more attractive for residents and, in models such as co-housing, lower the cost of housing by allowing shared facilities.

Master deeds are when used when all of the land is in common ownership (e.g. by a single entity such as a church or a condominium association) but individual units or buildings are owned individually. Condominiums are the most common users of master deeds.

Additional references for Open Space Residential Development, Context Sensitive Development, and Cookie Cutter Development:

- Arendt, Randall. *Growing Greener, Putting Conservation into Local Plans and Ordinances.* Island Press, in cooperation with National Lands Trust, American Planning Association, and American Society of Landscape Architects. 1999
- Belansky, Evan and Stacey Justus. *Open Space Residential Development, Four Case Studies. Conservation Subdivision Design Project.* Metropolitan Area Planning Council. 2000.
- Dutchess County Department of Planning and Development, adopted from guidelines by Joel Russell, et al. *Rural Development Guidelines.* New York Planning Federation. 1994.
- Heyer, Fred. *Preserving Rural Character.* American Planning Association Planners Advisory Service. 1990.
- Yaro, Robert, et al. *Dealing with Change in the Connecticut River Valley: A Design Manual for Conservation and Development.* Massachusetts Department of Environmental Management and Center for Rural Massachusetts. 1988.

All of the model Open Space Residential Development models cited are excellent resources work well. They are generally designed more around open space preservation and not as much around forest conservation purposes.

Model Bylaw- Severability Clause

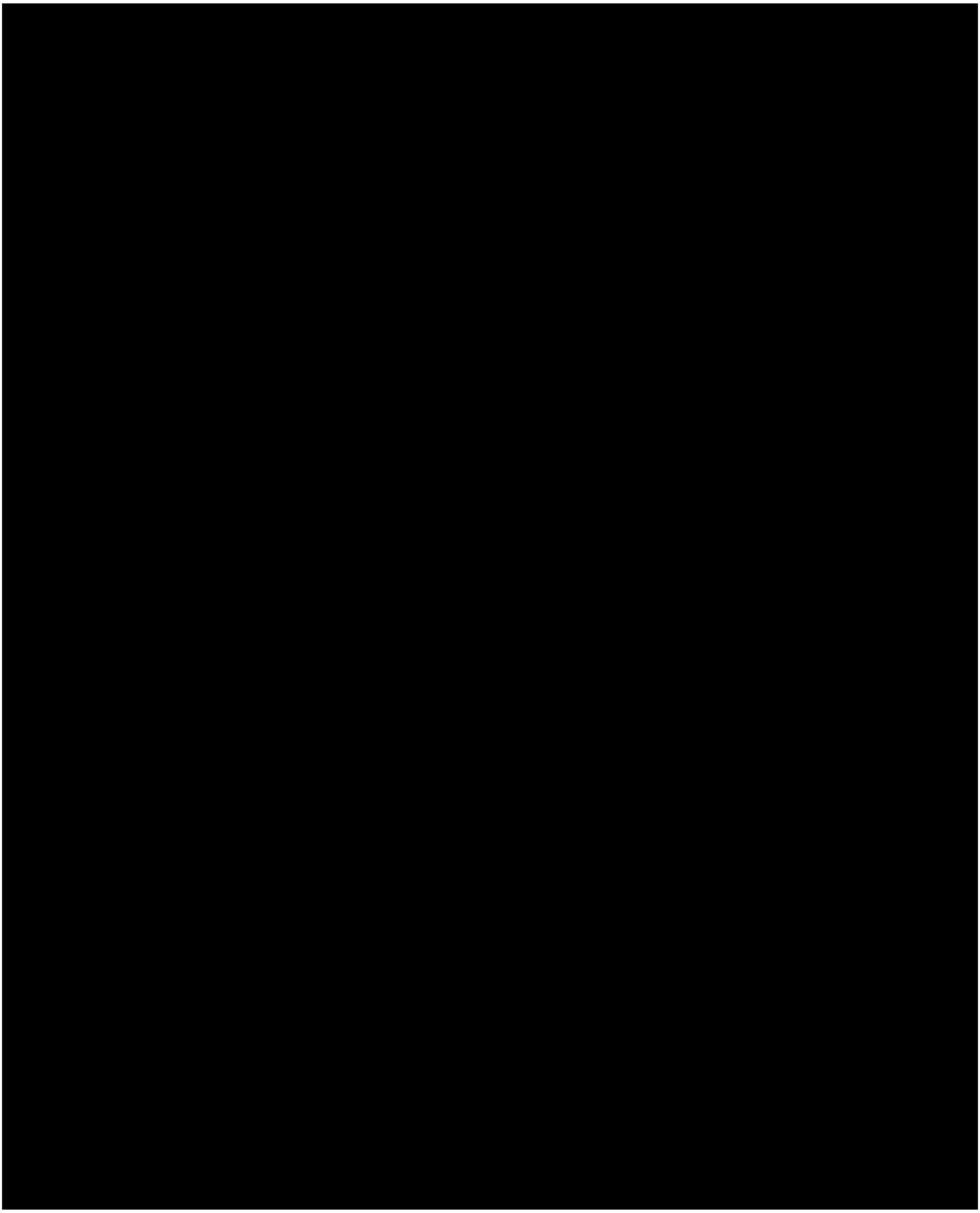
If any provision of this bylaw {regulation} is held invalid by a court of competent jurisdiction, the remainder of the bylaw {regulation} shall not be affected. The invalidity of any section or sections or parts of any section or sections of this bylaw shall not affect the validity of the remainder of the bylaw.

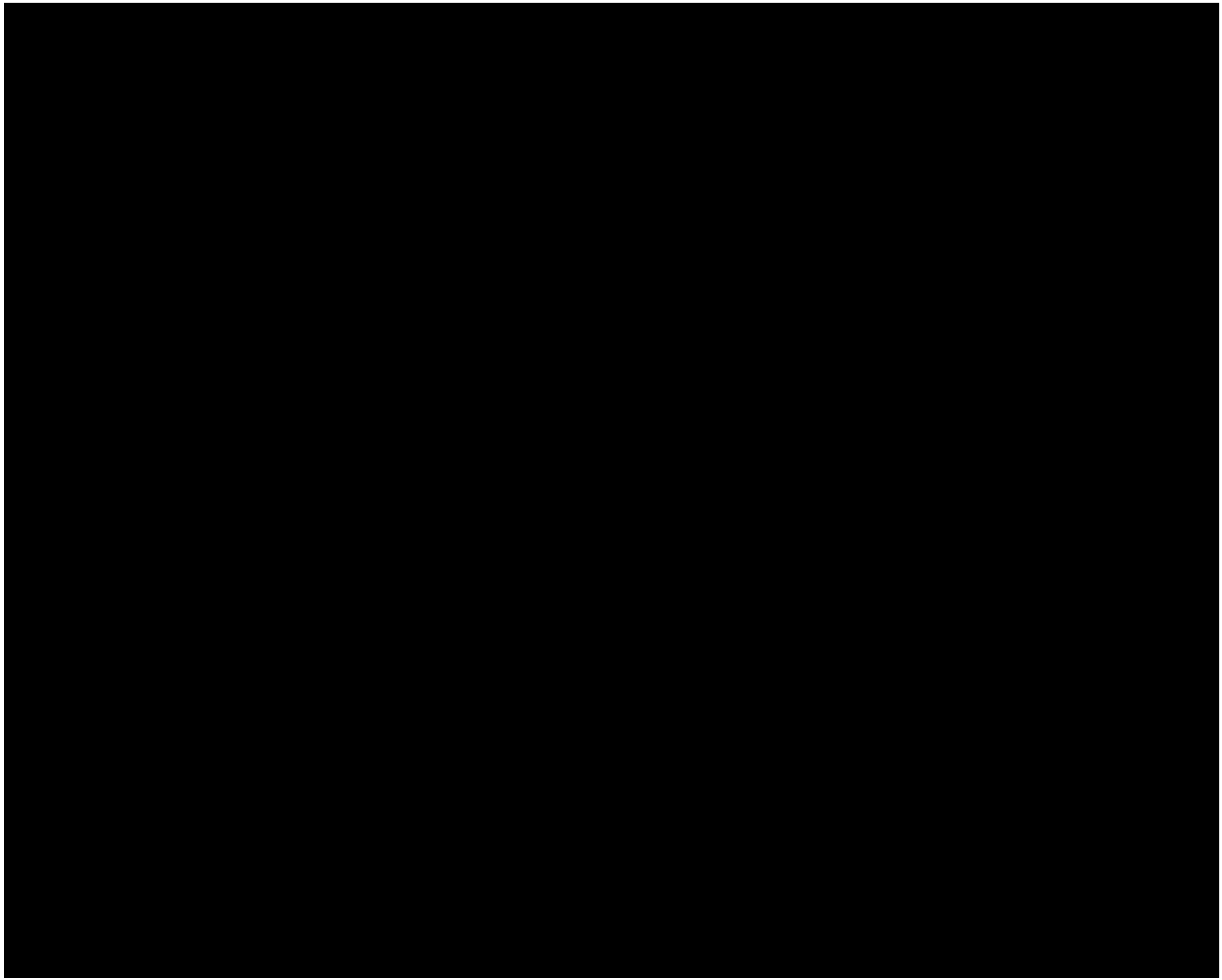
Every bylaw and regulation should include a severability clause so that if a court strikes an offending section the rest of the bylaw stands.

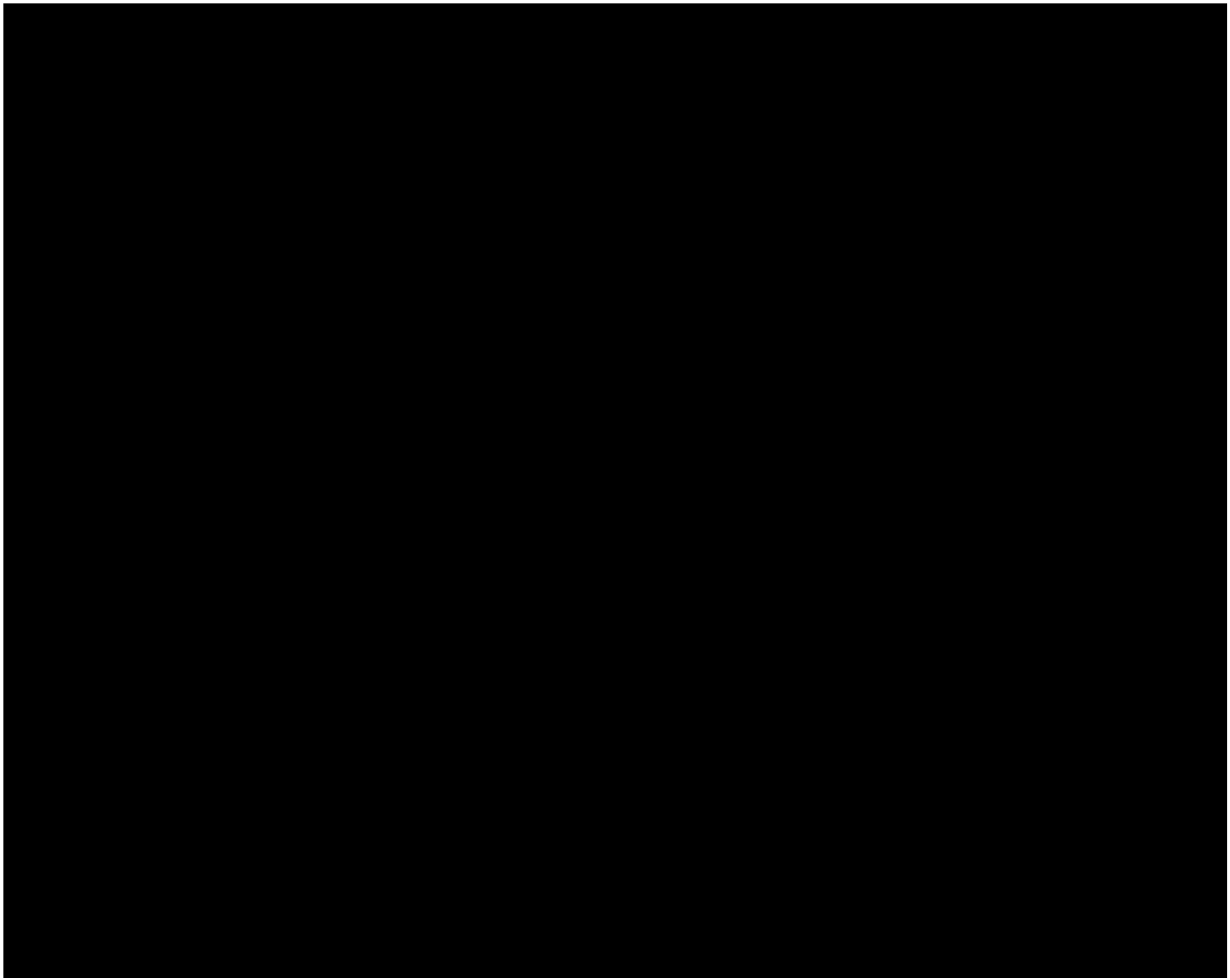
In some cases, a town may want the entire chapter of a bylaw to be void if a key section is struck. The bylaw should clearly state that if that is town's goal.

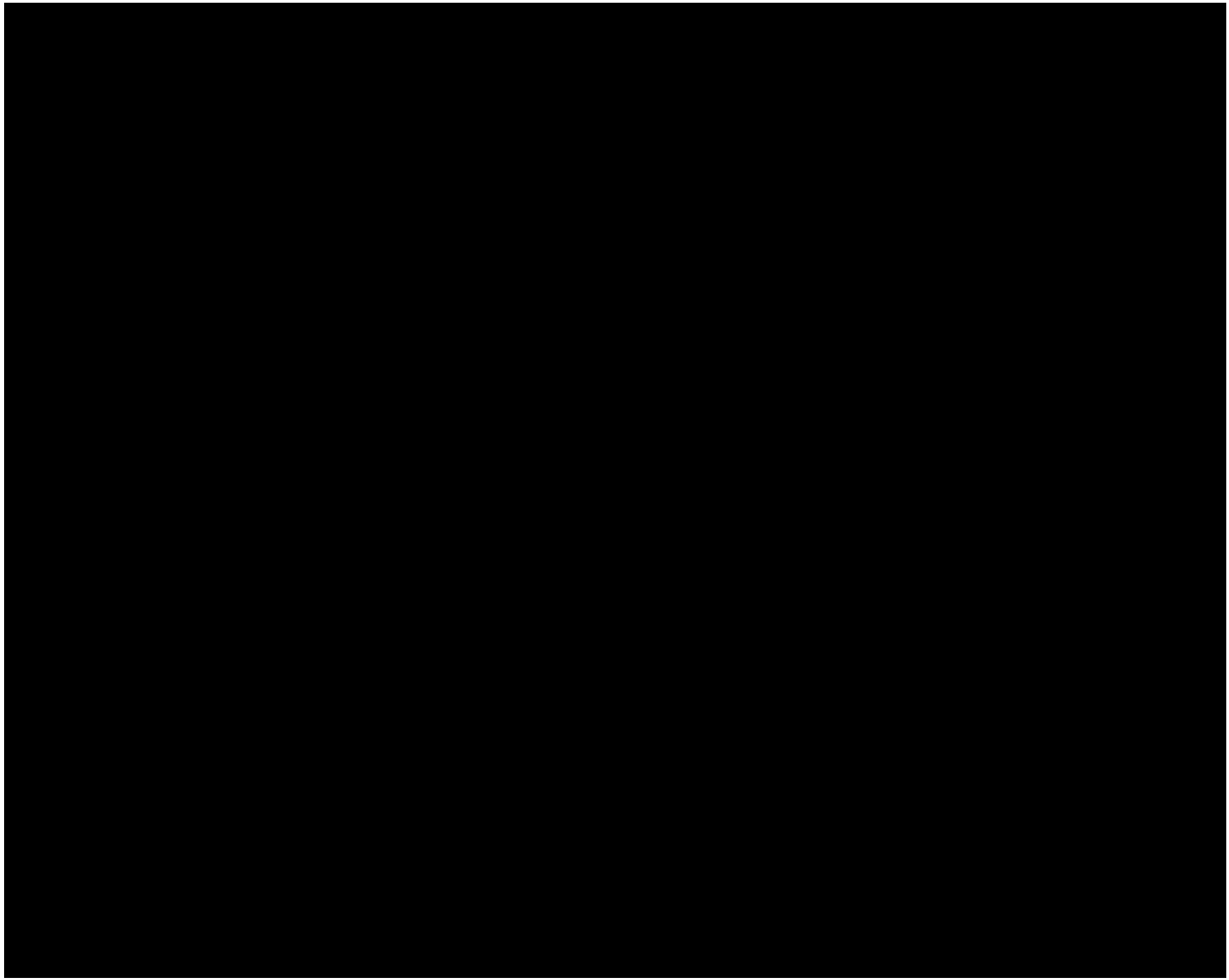
June 2, 2007 Kickoff Presentation

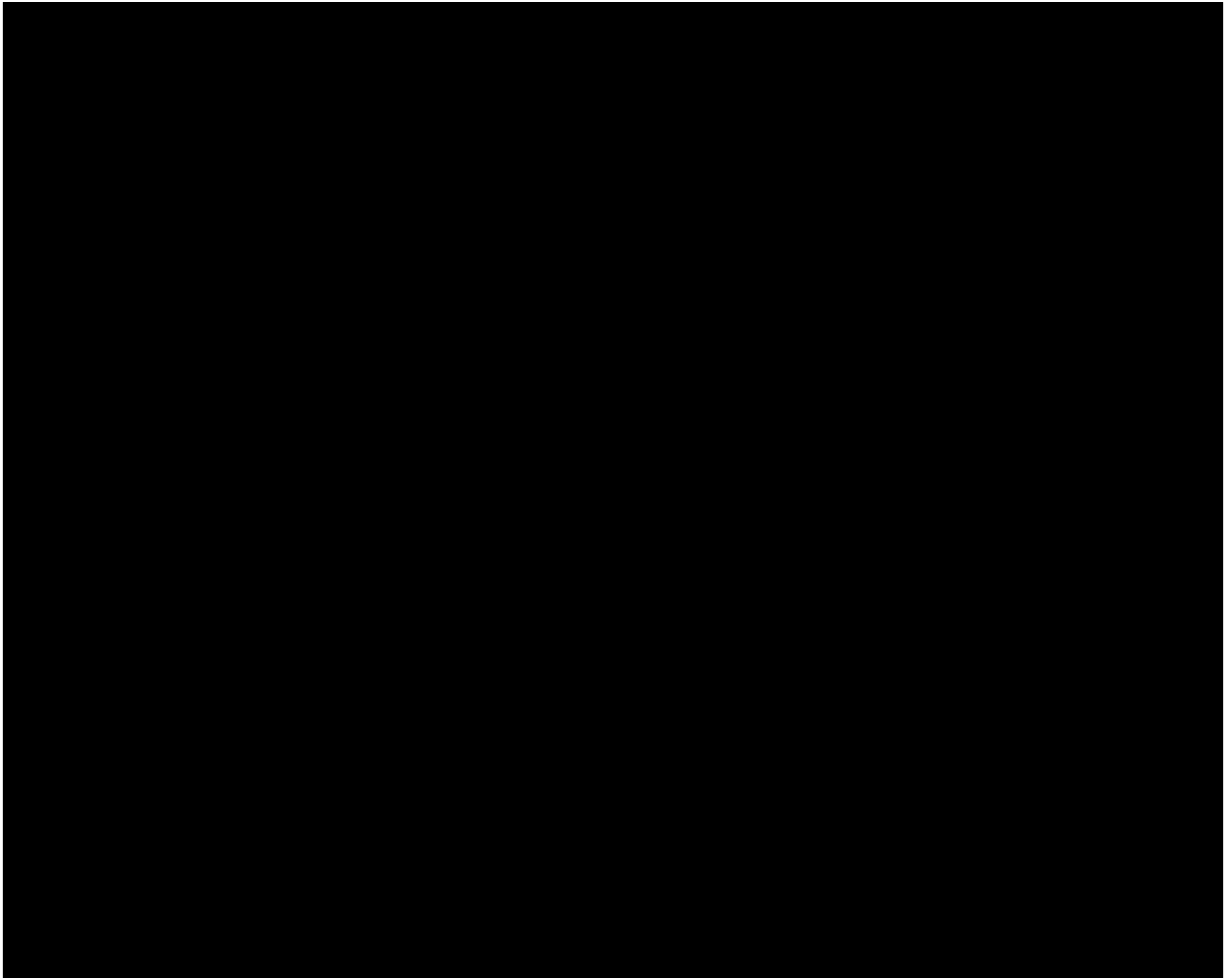
Slide show shown presented at the Wendell and Pelham community kickoff meetings.

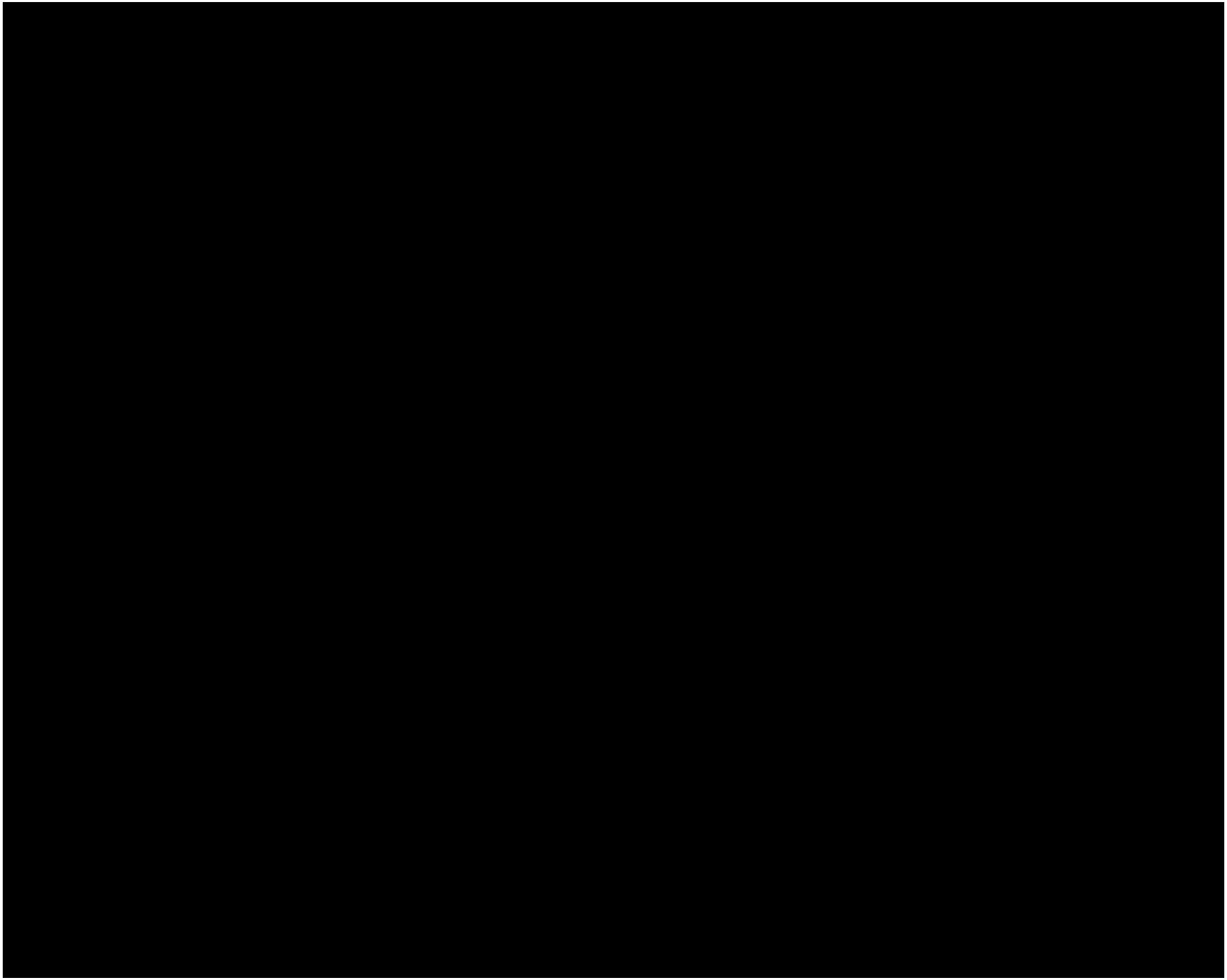












Appendix: June 2, 2007 Wendell Community Brainstorming

Land Value to Us

- Amount of land classified as protected (2)
- Ample recreational opportunity
- Dirt roads – discourages development, benefit pedestrians, horses, and wildlife
- Rural character
- Protected land slows development
- Contiguous forests
- Beauty
- Water resources AND Natural resources
- Forests
- Not overly densely populated
- Historic remnants and character
- Clean air and water
- Large amounts of open space still available
- Forests--to see, walk, and to keep us cool
- Vulnerable ecosystems
- Reduced connection to land
- Opportunity to protect more land could soon be gone

Kids and Community Contribution

- Very good elementary school
- Good place to raise kids
- Residents supportive of land protection
- People who volunteer their uniqueness
- Participatory
- People in town help each other when in need
- Active citizens
- People with diverse viewpoints
- Communication

Community Values/Perspectives

- Native versus newcomer biases
- Closed minded "I know what I know"
- Younger generations need to be involved in local government
- People are not aware that time is running out to keep rural character and working lands
- Could lose long-time community values
- Cohesion AND Small familiar population
- Widespread environmental consciousness
- Citizen participation in planning
- Small communities have values in common
- Growing awareness in environment and energy issues
- Reclusive
- Good people who care about our region
- People who care about the environment and each other
- Progressive politics
- Many people care deeply about living in harmony with nature and each other
- Many want to protect connected habitat, etc.
- Dedication to place of mixture of family longevity and environmental knowledge
- High appreciation of surrounding landscape – strong sense of community
- Vigorous political climate BUT also apathy
- Strong stewardship ethic
- Democratic process AND freedom

Local Economic Issues

- Forest resource can provide value added economy
- Naturally productive forest ecosystems
- Collaboration within forested, agriculture, and artistic economies
- Alternative waste-treatment using biological systems
- Little coordination of local economies (artistic, forest products, agriculture)
- Potential to encourage more local-centric commerce
- Unintended consequences
- Promotion of forest resource enterprises
- Large blocks of forest land
- Land-based home economy
- Working farms
- Forest products
- Tourism
- Town is a bedroom community
- Orange, Athol, and Amherst for larger job locations--Wendell for small business startups
- Support exists to live and produce locally
- Potential to depend too much on fossil fuels for transportation and production
- Oil depletion could force town to be serious about local economy
- No serious effort to develop town economy
- Must drive to work
- Affordability

Town Government and Regional Organizations

- Communication among town boards (regulatory or otherwise)
- Towns willing to work together
- Lack of infrastructure
- Need bylaw/zoning to stave off rampant development (4)
- Need more support for wilderness
- Very little has been done to actually protect more land
- Hard for volunteer boards to keeping up on their responsibilities
- Regulatory incentives
- Not enough volunteer for town government
- Limited technical expertise and consistent efforts
- Liability to be excessively developed
- Complexity of bylaws make implementing and regulation difficult
- Development pressure
- No public water or sewer to focus building projects
- We can look at our towns as a region and work together
- Regional cooperation regarding land management initiative
- Share professional support to landowners (i.e. forest management)
- Lack of resources/funds for needs (2)

Land ownership

- Pride of ownership
- Purchase of development rights
- Nature of land ownership

Land Conservation Options

- Land trusts are active and helpful but need a way to connect with landowners who will likely sell to NQRLP
- Utilization of extensive and educated knowledge base
- Still time to coordinate approaches to conservation and development
- Sharing all ideas and needs with all interested people
- Town and Town government can work together
- Lack of understanding of potential, future conditions (hind sight)
- Recent case law helps towns seeking to protect natural resources
- Potential for a balance between social equity and preservation
- Large tracts of undeveloped land
- Large amounts of open space already protected in whole region
- Much of the land is undeveloped which gives us opportunities which other don't have
- Land available for intelligent growth matched with protected conserved land
- Town could determine what it really want to look like
- Enduring awareness of forest values
- More conservation easements
- Potential to treat town as integral to healthy, functional ecosystem
- Many conservation options
- Not enough known about C.61, 61A, 61B options by landowners
- Political climate favors forest protection

Boston and Federal Dollars

- Low state and federal support
- Lack of land preservation funds/bank
- Limited financial base
- Boston policy makers far away, physically and philosophically
- Limited financial resources
- Large financial burden and pressure on towns
- Some protected land suppresses timber resources
- Lack of commercial tax base
- Neglect by Boston
- Weak financial/technical state and regional support
- Untaxed state lands

Appendix: June 2, 2007 Pelham Community Brainstorming

People
Sense of lost community/economy post-1939
Educated, engaged townspeople (2)
Too few participants for town boards
Apathy, dearth of interest in government (4)
Boards and towns cooperation
Moderate population (human)
Strong sense of community (3)
Relative personal wealth of residents
Factions and class divide (2)
Not diverse ethnically or economically
Mix of professional and working people
"New" people who demand urban services
Houses and people more isolated
Small town feel
We have not (yet) destroyed our moral character
Educated population
Untapped community talent
High personal incomes can help solve problems
Strong sense of town history (2)
Low crime

Taxes
No commercial tax base (8)
Insufficient infrastructure to support commerce
Land relatively low in price
Opportunity for home business
High property tax (3)
No town financial resources (3)

School
Good school (4)
School is so small
Small enough for a single elementary school and neighbor recognition

Town Center Need
Lack of town social and economic center (3)
Small community
Lack of businesses to serve us and build community (2)
Build a town center around library, school (2)
New technologies might enable planned commercial development
Small caring community atmosphere

Proximity to Needs
Sharing resources with other communities
Due to costs, lack to balance to economic/ethnic opportunity
Lack of public transportation
Making town more accessible to non-auto commuters
Highway (202) could handle some development
Commutable from/to city
Traffic corridor for Boston/UMass
State and regional resources
Medical assist such as ambulance, shared school budget, etc.
Access to nearby cultural activities and shopping
Good public services with volunteer base

Ecological Values
History of support for conservation
Top of the watershed
Large blocks of valuable undeveloped land (6)
Ties to the land (2)
Wildlife readily available for observation
Rich species diversity
Buffrem Falls Conservation Area
Much open space already protected
A chance to preserve beautiful habitat in the hills
Citizens' lack of knowledge of value of open space
Conserving large blocks adjacent to Quabbin (3)
High overall forest cover and ecological connectivity (2)
No bike paths or safe bike commuting possibilities
Clean air and water
Set more land aside
The ability to observe wildlife
Cadwell Forest
Educate public re: importance of preserving land
People are interested in protecting more
Conservation modeling for other communities
Really sound environmental planning
Possible recreation contributions to surrounding towns
Lack of clear consensus on what to preserve and develop
Awkward regulatory tools for conservation
Chance to recognize the strengths that Pelham has that benefit the region (land, watershed)
Multiple methods for achieving conservation goals
Tendency toward hyper-environmentalism
Water resources (2)
Protect habitat, rural character
Preserve working landscape
Integrated conservation contribution to the region
Preserve trails so not fragmented (2)
Natural beauty
Opportunity to obtain more land to preserve (2)
Large intact blocks of forest/wildlife (4)
Residents want sustainable local resourc
Hiking and recreational trail opportunities (2)
Some do not want to protect more land
Wetland resources
Usable open space (recreation)
Low development
Botanical diversity
Encourage sustainable leisure use (hiking, ecological forest education)
Somewhat rural
Low population density

Housing
Could provide wide variety of housing opportunities
Assessment of assisting the elderly to stay in family home
Elderly housing
Create affordable housing
Land at risk of sprawl
Land is high cost in town

Planning for future development
Desire to control our community
Think ahead to what will help the community – not grow randomly
To be pro-active not re-active
Poor tools to manage development pressure
Zoning that may not meet the needs of the future
Promote regional government
No plan for development
Control intelligent growth
Good regulations
Lack of cohesiveness in terms of long-term planning
Lack of adequate technical and financial assistance
Challenge to increase value of property without adding children to the school
Pressure to build more and more houses
Plan intelligent growth
Slow down the rate of change
Inappropriate efforts to urge increased development which can't be supported
Opportunity will not exist long
What if Board of Health regulations are questioned?

Economic Development
Home based businesses
Limited economic opportunity (competition with Amherst and Belchertown)
Ledge and clay impede horticulture
Encourage sustainable agriculture
Heavy and high-grade logging activity
Lack of forest industry
Lack of infrastructure (2)
High property values

Appendix: Shutesbury's Proposed Open Space Development Zoning

Note: Shutesbury's Open Space Development Zoning is under development and the final version, if adopted, may be revised from what is shown here.

SECTION 5.1 PURPOSE AND APPLICABILITY

5.1-1 Purpose

The primary purpose of this Section is to preserve the open space resources of Shutesbury as identified in the Master Plan, especially large contiguous blocks of forested land that must be maintained as large-acreage holdings in order to remain economically viable for forestry. This is necessary for the continuation of forestry as a significant resource-based local industry and for the protection of the Town's water resources and other unique environmental assets. This section is also intended to foster compact development patterns using flexible regulations for density and lot dimensions and to promote and encourage creativity in neighborhood design. The Town wishes to encourage the use of Open Space Development because Open Space Development results in the preservation of contiguous open space and important environmental resources, while allowing design flexibility. Open Space Development reduces development impacts on farmland, forests, wildlife habitats, large tracts of contiguous open space, environmentally sensitive areas, steep slopes, hilltops, and historically significant areas. To encourage this type of development, Open Space Development is allowed by right, subject only to the requirements of the Regulations Governing the Subdivision of Land. An Open Space Development that does not require approval as a subdivision is allowed by right subject to Site Plan approval by the Planning Board. In order to encourage small subdivisions to follow Open Space Development principles, there is no minimum parcel size or number of lots required for an Open Space Development.

5.1-2 Applicability

A. Within the FC, RR, and LW District, all residential subdivision shall comply with the Open Space Development provisions of this Article V, unless the Planning Board allows a development that deviates from the requirements of Article V by Special Permit. Such deviations may be approved if the applicant demonstrates that the proposed alternative development configuration provides adequate protection of the site's environmental resources and fulfills the purposes of this Article as well as or better than an Open Space Development.

B. Subsection A above applies only to subdivisions of land as defined in MGL Ch. 41, § 81L, and not to construction of homes or businesses on individual lots that existed prior to May 5, 2007 or to lots created through the "Approval Not Required" process with frontage on public ways existing as such as of May 5, 2007 described in the Regulations for the Subdivision of Land (the "Subdivision Regulations"). However, if subdivision approval is not required because a new roadway is not proposed, an applicant may nevertheless apply for an Open Space Development under this Article V. In such a case, the application shall be subject to site plan review as described in Article IX. If the proposed Open Space Development also involves one or more common driveways, density bonuses, transfer of development rights, and/or any other use that requires a special permit, the proceedings for all such special permits and the site plan review for the lot configuration shall occur in one consolidated special permit proceeding before the Planning Board.

SECTION 5.2 DEVELOPMENT IMPACT STATEMENT AND CONSERVATION ANALYSIS

In order to enable the Planning Board to determine whether or not a proposed Open Space Development (or development by special permit that deviates from the requirements for Open Space Development) satisfies the purposes and standards of this Article, an applicant must present sufficient information on the environmental and open space resources for the Board to make such determination. The required information shall be provided in the form of a Development Impact Statement, including a "conservation analysis" as described in Subsection IX of Section VIII of the Subdivision Regulations. In the case of an Open Space Development that is not a subdivision, and that is presented as a site plan review application, the applicant shall not be required to submit a full Development Impact Statement. However, the Planning Board may require the submission of all or part of a conservation analysis as described in the Subdivision Regulations.

5.2-1 Conservation Analysis and Findings

A. Prior to filing an application, an applicant is encouraged to meet with the Planning Board to discuss the conservation resources on the site. At such a meeting, the Planning Board shall indicate to the applicant which land is likely to have the most conservation value and be most important to preserve and where development may be most appropriately located.

B. In the case of a proposed plan that deviates from the requirements of this Article, if the Planning Board determines that the land with the greatest conservation value cannot be protected except by the use of an open space development plan, the Planning Board shall deny the Special Permit for the deviation and require that the applicant submit a plan that complies with the requirements for an open space development.

C. The Planning Board shall study the conservation analysis and formally determine which land should be preserved and where development may be located. The Planning Board shall make written findings supporting this determination (the "conservation findings"). The Planning Board shall deny any application that does not include sufficient information to make conservation findings or that does not preserve land that the Planning Board determines should be preserved from development as a result of the conservation analysis and findings.

D. The Planning Board's conservation findings shall be incorporated into its decision to approve or deny an application. The conservation findings shall show land to be permanently preserved by a conservation restriction, as well as recommended conservation uses, ownership, and management guidelines for such land. The conservation findings shall also indicate preferred locations for development if the Plan is denied based upon such findings.

E. Subsections C and D above shall apply to any site plan submitted in connection with an Open Space Development that is not a subdivision. For Open Space Developments that involve subdivisions of land, the provisions of Subsection IX of Section VIII of the Subdivision Regulations shall apply.

5.2-2 Minimum Preserved Open Space

The Plan shall show that at least the percentages of the total acreage listed below will be preserved by conservation restriction, based upon the conservation findings. At least 50% of the land set aside as preserved open space under this subsection shall be buildable land as defined in Article XIII, and the remainder of the land preserved as open space may include wetlands, steep slopes, and other unbuildable land.

FC District: minimum of 80% RR, LW District: minimum of 50%

SECTION 5.3 ALLOWABLE RESIDENTIAL UNITS

The maximum number of residential units in an open space development is calculated by a formula based upon the net acreage of the property. This formula is intended to take into account site-specific development limitations that make some land less developable than other land. This calculation involves two steps, calculating the net acreage and dividing by the base allowed density.

5.3-1 Net Acreage Calculation

To determine net acreage, subtract the following from the total (gross) acreage of the site:

A. The total acreage of lakes, ponds, and land subject to easements or restrictions prohibiting development, and

B. One-half of the acreage of the following: slopes exceeding 20% (2000 square feet of more of contiguous sloped area at least 10 feet in width), floodplains, and wetlands as defined in Chapter 131, Section 40 of the General Laws, as determined by an accredited wetlands specialist. Applicants shall use the Field Data Form found in Appendix G of the Massachusetts DEP Handbook "Delineating Bordering Vegetated Wetlands Under the Massachusetts Wetlands Protection Act" (1995) (the "Handbook"). The complete form shall be submitted including all methods of determination, i.e., vegetation, soil, and any other indicators, as provided for on the form. If detailed vegetative assessments are not required by the Handbook for a particular site, the reasons must be noted on the Field Data Form.

5.3-2 Unit Count Calculation

To determine the base maximum number of allowable residential dwelling units on the site, divide the net acreage by 3 in the RR or LW Districts or by 10 in the FC District. Fractional units of less than .5 shall be rounded down and .5 or more shall be rounded up.

5.3-3 Density Bonuses

The unit count determined in Section 5.3-2 above may be increased through density bonuses designed to advance important goals of the Shutesbury Master Plan. Density bonuses are given by special permit at the discretion of the Planning Board based upon the expected public benefit. They are calculated by first determining the allowable unit count under Section 5.3-2 without rounding fractional units up or down, and then multiplying that number by 100% plus the percentages that follow. Resulting fractional units, if any, shall be rounded up or down as in §5.3-2.

A. If the applicant allows deeded public access to the open space portion of the property and the Planning Board finds that such public access provides a significant recreational benefit to the Town (such as access to an important natural area or a trail system): a maximum of 20%.

B. If the applicant permanently restricts ownership and occupancy of units allowed by §5.3-2 as affordable housing (as defined in this bylaw), and makes a binding commitment to construct such affordable residences: a maximum of 40%. For every unit included in the allowable unit count under Section 5.3-2 that is built and dedicated as an affordable unit, two bonus market rate units may be permitted, up the maximum of 40% of the allowable unit count.

C. If the applicant preserves as permanent open space more than the minimum required percentage: a maximum 10% density bonus per additional 5% of the parcel preserved as open space.

5.3-4 Density Transfer (Transfer of Development Rights)

The Town of Shutesbury encourages flexibility in the location and layout of development, within the overall density standards of this Zoning Bylaw. The Town therefore will permit residential density to be transferred from one parcel (the "sending parcel") to another (the "receiving parcel") in Open Space Developments under this Article V. Density transfers may only be permitted from sending parcels in the FC district to receiving parcels in either the FC or RR districts. If a sending parcel is located in both the FC and another district, only those portions of sending parcel that actually lie within the FC District may be considered in determining the number of units allowed to be transferred. The process of density transfer is as follows:

A. Procedure

1. All density transfers require a Special Permit from the Planning Board.

2. The Special Permit application for a density transfer shall be signed by the owners (or their authorized representatives) of both the sending and receiving parcels.

3. The Special Permit application shall show a proposed development plan for the receiving parcel (subdivision and/or Site Plan) as well as a base unit count calculation prepared according to the provisions of §5.3.-2. For the sending parcel, the applicant may calculate the allowable number of units eligible to transfer by either:

a. Calculating the net acreage pursuant to §5.3-1 and dividing by 15; or

b. Dividing the total (gross) acreage by 25.

Fractional units of less than .5 shall be rounded down and .5 or more shall be rounded up.

4. Sending parcels existing as such on May 5, 2007 may have development rights calculated by either method a or b at the applicant's election. Sending parcels which have been modified by lot line changes since May 5, 2007 must employ method a. The density calculation for the sending parcel shall not include any of the density bonuses available under §5.3-3.

5. In reviewing an application for density transfer, the Planning Board shall first determine the number of allowable residential units permitted on the receiving parcel using all of the relevant standards in § 5.3-2 and any density bonuses sought under §5.3-3. The Planning Board shall then determine the number of residential units available to transfer from the sending parcel(s) pursuant to §5.3-4A.3.a. or b.

6. The Planning Board may then grant a Special Permit allowing the transfer to the receiving parcel of some or all of the allowable residential units from the sending parcel(s).

7. As a condition of approval of the density transfer, a conservation restriction on the sending parcel(s) satisfying the requirements of §5.6 shall be executed and recorded in the Registry of Deeds. The conservation restriction shall require that the total area of land used in the calculation required under 5.3-4A.3.a. or b. above be permanently restricted. (For example, if five units are transferred and the calculation is according to §5.3-4A.3.b., at least 125 acres of the sending parcel would have to be permanently restricted.). Those portions of the sending parcel(s) not required to be subject to the conservation restriction may be used in accordance with this zoning bylaw.

B. Findings Required

The Planning Board shall not approve any residential density transfer unless it finds that:

1. All requirements for the granting of a Special Permit have been satisfied.

2. The addition of the transferred units to the receiving parcel will not increase the maximum allowable unit count under §5.3-2 by more than 100%, and will not adversely affect the area surrounding the receiving parcel.

3. The density transfer will benefit the Town by protecting a substantial area of developable land with conservation value on the sending parcel(s) in a manner that furthers the purposes of the FC District.

4. The density transfer will be consistent with the Master Plan.

5.3-5 Maximum Density Bonus and/or Density Transfer

The density bonuses and transfers of development rights allowed in §§5.3-3 and 5.3-4 above may be combined to result in a total zoning density increase not exceeding 100% on any parcel. Density bonuses and/or transfers may only be used if the resulting development complies with Title 5 of the State Environmental Code as determined by the Board of Health.

5.3-6 Lots in More than One District

For lots in more than one district, the allowable unit count (excluding bonuses or transfers) and required open space for each district shall be computed separately first. These totals shall be added together and the allowable maximum bonus and transfer of development rights for the entire development shall be calculated based upon this combined total number of units. The permitted location of the units and protected open space shall be wherever the Planning Board determines best fits the characteristics of the land, based upon the conservation analysis.

SECTION 5.4 TYPES OF RESIDENTIAL DEVELOPMENT

The allowable residential units may be developed as single-family, two-family, or multi-family dwellings, provided that applicable Special Permit or site plan review requirements for the land use district are satisfied and that the number of dwelling units does not exceed the allowable unit count in Section 5.3 above. The subdivision approval and Special Permit/Site Plan requirements shall be fulfilled concurrently in one proceeding to the extent practical. Any open space development application involving two-family or multi-family dwellings shall include a site plan that shows the location, layout, height, and setbacks of such dwellings. Accessory apartments shall be permitted in Open Space Developments and shall not be counted toward the total allowable unit count. Such apartments shall comply with the requirements of Section 4.4-2, except that the requirements of Sections 4.4-2A and 4.4-2B (lot area and setback requirements) shall not apply.

SECTION 5.5 DIMENSIONAL AND DESIGN REQUIREMENTS

5.5-1 Minimum Lot Sizes in Open Space Developments

The limiting factor on lot size in Open Space Developments is the need for adequate water supply and sewage disposal. Therefore, there is no required minimum lot size for zoning purposes. This does not affect the powers of the Board of Health to require areas on a lot for the disposal of sewage and the protection of water supply.

5.5-2 Setbacks, Road Frontage, and Road Requirements

There shall be no requirements for minimum setbacks or road frontage in an Open Space Development, provided that each dwelling unit has legally and practically adequate vehicular access. All dwellings must comply with applicable Board of Health requirements. The Planning Board may modify the applicable road construction requirements for new roads within an Open Space Development as provided in the Land Subdivision Regulations, if it finds that such modifications will be consistent with the purposes of this Article V and the Master Plan.

5.5-3 Arrangement of Lots

A. Lots shall be located and arranged in a manner that protects views from roads and other publicly accessible points, farmland, wildlife habitat, large intact forest areas, hilltops, ponds, steep slopes, and other sensitive environmental resources, while facilitating pedestrian circulation. The Planning Board shall take into consideration the conservation findings in approving the arrangement of lots.

B. Lot layout, land alterations, and placement of structures shall follow applicable portions of the Rural Siting Principles in Section 8.3 and any design guidelines for Open Space Development which may be adopted by the Planning Board.

SECTION 5.6 PERMANENT OPEN SPACE

Open space set aside in an Open Space Development or as a condition of any Special Permit or Site Plan approval (see Article IX) shall be permanently preserved as required by this Section 5.6. The Planning Board may not require such open space land to be accessible to the public, unless a density bonus is allowed under Subsection 5.3-3A. Any development permitted in connection with the setting aside of open space land shall not compromise the conservation value of such open space land, based upon the conservation findings of the Planning Board.

5.6-1 Permanent Preservation of Open Space Land

All land required to be set aside as open space in connection with any Open Space Development shall be so noted on any approved plans and shall be protected by a permanent conservation restriction, as defined in Article XIII, to be held by the Town of Shutesbury, the Commonwealth of Massachusetts, or a non-profit conservation organization qualified to hold conservation restrictions under G.L. Chapter 184, Section 31, and also qualified to hold tax-deductible conservation easements under Section 170(h) of the Internal Revenue Code. The restriction shall specify the permitted uses of the restricted land. The restriction may permit, but the Planning Board may not require that the restriction permit, public access or access by residents of the development to the protected open space land.

A. Ownership of Open Space Land

1. Protected open space land may be owned in common by a homeowner's association (HOA), dedicated to Town or State governments with their consent, transferred to a non-profit organization acceptable to the Planning Board, held in private ownership, or held in such other form of ownership as the Planning Board finds appropriate to manage the open space land and protect its conservation value.
2. If the land is owned in common by an HOA, such HOA shall be established in accordance with the following:
   a. The HOA must be created before final approval of the development, and must comply with all applicable provisions of state law.
   b. Membership must be mandatory for each lot owner, who must be required by recorded covenants and restrictions to pay fees to the HOA for taxes, insurance, and maintenance of common open space, private roads, and other common facilities.
   c. The HOA must be responsible for liability insurance, property taxes, the maintenance of recreational and other facilities, private roads, and any shared driveways.
   d. Property owners must pay their pro rata share of the costs in Subsection c above, and the assessment levied by the HOA must be able to become a lien on the property.
   e. The HOA must be able to adjust the assessment to meet changed needs.
   f. The applicant shall make a conditional offer of dedication to the Town, binding upon the HOA, for all open space to be conveyed to the HOA. Such offer may be accepted by the Town, at the discretion of the Board of Selectmen, upon the failure of the HOA to take title to the open space from the applicant or other current owner, upon dissolution of the association at any future time, or upon failure of the HOA to fulfill its maintenance obligations hereunder or to pay its real property taxes.
   g. Ownership shall be structured in such a manner that real property taxing authorities may satisfy property tax claims against the open space lands by proceeding against individual owners in the HOA and the dwelling units they each own.
   h. Town Counsel shall find that the HOA documents presented satisfy the conditions in Subsections a through g above, and such other conditions as the Planning Board shall deem necessary.

B. Maintenance Standards

1. Ongoing maintenance standards shall be established as a condition of development approval to ensure that the open space land is not used for storage or dumping of refuse, junk, or other offensive or hazardous materials. Such standards shall be enforceable by the Town against any owner of open space land, including an HOA.

2. If the Board of Selectmen finds that the provisions of Subsection 1 above are being violated to the extent that the condition of the land constitutes a public nuisance, it may, upon 30 days written notice to the owner, enter the premises for necessary maintenance, and the cost of such maintenance by the Town shall be assessed ratably against the landowner or, in the case of an HOA, the owners of properties within the development, and shall, if unpaid, become a property tax lien on such property or properties.

Open Space Design Worksheet-- Shutesbury Planning Board's Guide to Open Space Zoning

To Calculate Dwelling Units	
#1. Determine acreage of the entire project.	
#2. Determine the acreage in the RR zone.	
#3. Determine the acreage of all undevelopable lands in the RR zone: wetlands (1/2), slopes (1/2), flood plain (1/2), lakes, ponds, or restricted areas.	
#4. Subtract, as indicated above, either all or one-half of the acreages in #3 from the total area of the RR zone in #2.	
#5. Divide the remainder acreage in the RR zone by three.	
#6. Determine the acreage in the FC zone.	
#7. Determine the acreage of all undevelopable lands in the FC zone: wetlands (1/2), slopes (1/2), flood plain (1/2), lakes, ponds, or restricted areas.	
#8. Subtract, as indicated above, either all or one-half of the acreages in #7 from the total area of the FC zone in #6.	
#9. Divide the remainder acreage in the FC zone by ten.	
#10. Combine the results of #5 and #9 and round up or down (less than 0.5 = down, 0.5 or greater = up) to equal the base number of dwelling units.	
#11. Add in any dwelling units from density bonuses and/or TDR to arrive at the maximum dwelling units (may not exceed 1.5X the base number from #10).	
To Calculate Open Space	
#12. Multiply the total RR acreage (from #2) by 0.5.	
#13. Multiply the total FC acreage (from #6) by 0.8.	
#14. Add #12 and #13 to equal the base acreage of open space.	
#15. Add any additional open space from density bonuses, if any, to arrive at total acreage of open space to be preserved.	
To Calculate Developable Land	
#16. Subtract #15 from #1 to arrive at the acreage remaining for development as streets and houselots.	

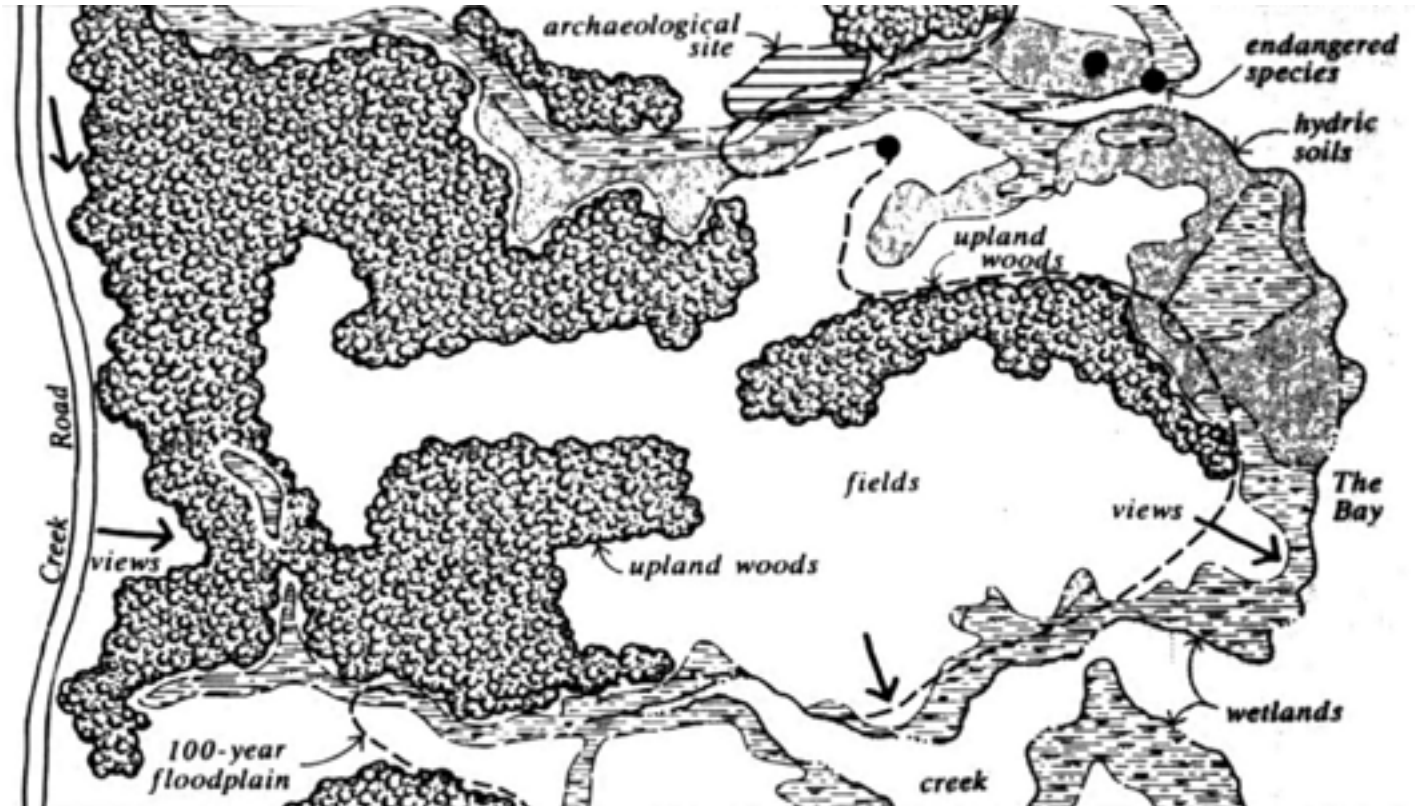
Design

The location and relationship between developed areas and open space, as well as neighborhood layout, roadway access, and trails, are addressed by the applicant and Planning Board through a process called "Conservation Analysis," which is administered either through the subdivision regulations or through site plan review (if the project is not a subdivision).

Note: Shutesbury Open Space Zoning is under development and the final version, if adopted, may be revised from what is shown here. The worksheet was developed by Shutesbury to assist landowners and others in understanding the zoning. Estimates based on the zoning draft on the date of analysis and the information then provided by the landowner. Actual results may vary with more accurate information, the design process, and the requirements of other local boards or state agencies.

Massachusetts Smart Growth Toolkit Open Space Residential Development Presentation

1. Identify Conservation Value Areas on the site such as wetlands, significant trees or tracts of forest, habitat, cultural resources or buffer zones. Remove these from the "developable area."



2. Place houses in the remaining area in a way that would maximize residents enjoyment of these areas by providing access to open space and preserving views.

3. Align roads and trails on the site to provide pedestrian and vehicle access.